## Adult Blood Transfusion Policy and Procedures

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Disclaimer: It is your responsibility to check against Staffnet that this printout is the most recent issue of this document.
The Trust strives to ensure equality of opportunity for all, both as a major employer and as a provider of health care. This (Blood Transfusion Policy) has therefore been equality impact assessed by the (QGSG) to ensure fairness and consistency for all those covered by it, regardless of their individual differences, and the results are available on request.
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Executive Summary

Patient Blood Management (PBM) is a multidisciplinary, evidence-based approach to optimising the care of patients who might need transfusion. PBM puts the patient at the heart of decisions made about blood transfusion to ensure they receive the best treatment and avoidable, inappropriate use of blood and blood components is reduced.

PBM represents an international initiative in best practice of transfusion medicine and this policy has incorporated the key objectives of the PBM conference: 'The Future of Blood Transfusion’, June 2012, hosted by the Department of Health (DH), the National Blood Transfusion Committee (NBTC) and the NHS Blood and Transplant (NHSBT)

Due to the high regulatory standards set out in the Blood Safety and Quality Regulations, 2005, monitored by the Medical Healthcare Products Regulatory Agency (MHRA) it is paramount that staff are trained adequately and competency assessed.

The Blood Transfusion Policy is intended to assist and guide all staff members involved at any stage of the transfusion process and is based on National Guidelines. As it is an extensive policy this version includes Clinical Operational flowcharts to assist the healthcare professional adhere to safe transfusion practice and national guidelines.
1 Introduction

The Blood Transfusion policy aims to inform and guide healthcare professionals who are involved in the transfusion process of safe transfusion practice.

The blood transfusion process is the shared responsibility of all staff involved in the various stages of the Transfusion Process.

Training is an essential aspect of safe transfusion, and is required for all staff involved in the Transfusion Process.

The clinical benefits to the patient outweigh the potential risks, the most important of these being acute haemolytic reactions, transfusion-transmitted infections and human error (especially at sample taking and the labelling of pre-transfusion samples). Stringent procedures must be followed to ensure that the correct blood is given and that any adverse reactions are dealt with promptly and efficiently.

1.1 Scope

This policy applies Trust wide across University Hospitals Southampton NHS Foundation Trust (UHSFT), and applies to all staff who are involved in some stage of the Transfusion Process.

This policy does not cover:

- The management of Ante or Post Partum Haemorrhage; neither does it cover the refusal of blood during pregnancy
- Taking of blood cultures.
- In-utero or paediatric transfusions
- Procedure for Registration of Emergency Patients (unknown/unidentified) requiring a Blood Transfusion
- Major Haemorrhage Blood Transfusion Policy

Please see separate Policies on Staffnet for the management of these procedures

1.2 Purpose

The main purpose of the Blood Transfusion policy (BT) is to ensure that the right patient receives the right blood component at the right time.

The objective of the policy is to give staff clear guidance on the correct procedures for:

- Obtaining consent for a blood transfusion
- The manual or electronic sample labelling (BloodTrack Tx) of a group and screen, cross-match, or any other sample intended for the Blood Transfusion laboratory.
- Appropriate use of blood components and products as per national guidelines and evidence based practice.
- Prescribing and the ordering of blood components and products as per local Blood Transfusion policy. See Appendix D for more information on blood components
- Collection of blood components – BloodTrack Courier, access to satellite blood fridges
- Transport and delivery of blood components and products
- Receipt of blood components in the clinical area and administration of blood components using BloodTrack Tx
• Care of a patient receiving a blood transfusion (BloodTrack Tx)
• Management of a transfusion reaction.
• Contingency in the event of BloodTrack Courier and Tx failure
• Monitoring compliance to the BT policy

2 Related Trust Policies/National Guidelines
• Standard Infection control precautions Policy
• Venepuncture adults (Over 18 years) and children (0-18 years)
• Sharp Safety policy
• Waste Management policy
• Hand Hygiene policy
• Guideline for the Prevention of Infection associated with Peripheral Venous Catheters in Adults
• Postpartum Haemorrhage Guidelines
• Declining Blood Transfusion (Maternity) Guidelines
• Patient Identification Policy
• Incident Reporting Analysis Investigation and Management Policy
• Statutory and Mandatory Matrix
• Estates Business Continuity Policy
• Policy for the Management of Blood Donor Shortage
• Major Haemorrhage Policy
• Procedure for Registration of Emergency Patients Requiring Blood Transfusion
• Guidelines for Blood Transfusion in the Paediatric Intensive Care Unit and Child Health
• Guideline for Blood Transfusion on the Neonatal Unit
• Guideline on the Administration of Blood Components, British Committee for Standards of Hematology (BCSH), 2012
• Guideline for the Investigation and Management of Acute Transfusion Reactions, BCSH, 2012
• NPSA alert 2010 RRR017
• Blood Transfusion Standard Operating Procedures BTBC and BTXM (available via Qpulse)

3 Roles and Responsibilities
The Chief Executive has overall responsibility and is accountable for ensuring that the Trust complies with Blood Quality and Safety Regulations, 2005 and the conservative approach to the use of blood components as set out by the National Blood Transfusion Committee

The Director of Nursing, working with the UHSFT Hospital Transfusion Committee (HTC), is responsible for ensuring that healthcare professionals are informed and follow the Trust Blood Transfusion policy for patient safety.

The Medical Director, working with the UHSFT Hospital Transfusion Committee, is responsible for ensuring that all medical personnel adhere to the Trust Blood Transfusion policy and that there is a designated medical representative from each Division who will attend the Hospital Transfusion Committee as per HTC terms of reference

Divisional Clinical Directors
Divisional Clinical Directors are responsible for designating a medical representative to attend the HTC and for ensuring that all medical staff comply with the UHS Blood Transfusion Policy. There is also a responsibility to implement recommended actions arising from investigations of incidents and audits conducted to monitor compliance with this policy.
Matrons
Matrons are responsible for working with Ward Managers to make it possible for all staff who administer blood transfusions and take blood samples to be trained and updated to the standards set out in the Trust’s Training Needs Analysis. There is also a responsibility to implement recommended actions arising from investigations of incidents and audits conducted to monitor compliance with this policy.

Divisional Governance Managers
Divisional Governance Managers are responsible for ensuring that staff in their Division comply with the Blood Safety and Quality Regulations, 2005, by ensuring that non-compliance letters are responded to.

Care Group Managers
Care Group Managers are responsible for ensuring that policies on patient identification are in place, implemented and monitored throughout the blood transfusion process from prescription, sampling, laboratory testing and issue of blood to collection and administration of blood transfusion.

Matrons and Care Group Managers are jointly responsible for ensuring:

- that staff who are involved in the blood transfusion process are competent through training to follow procedures which ensure that the correct blood is given at the right time.
- that written information is made available to patients about blood transfusion and potential alternatives.
- that staff have their training on BloodTrack Courier and BloodTrack Tx
- that the patient is positively identified through verbal interrogation and by looking at the patient identity wristband prior to taking a blood sample for cross-match or administering a blood component transfusion using BloodTrack Tx (PDA)
- that incidents are reported through the Trust Adverse Incident Reporting procedure

Hospital Transfusion Committee
The Hospital Transfusion Committee has delegated responsibility, on behalf of the Clinical Effectiveness Outcomes Steering Group, to oversee, develop and implement the Trusts policies and procedures related to blood transfusion. It is also responsible for identifying and managing risks associated with transfusion. It reports regularly to the CEOSG and submits a formal annual report describing the committees’ goals, achievements and challenges.

The Hospital Transfusion Team assists in the implementation of the Hospital Transfusion Committee’s objectives of promoting safe and appropriate transfusion practise, and providing training to all staff involved in the process of blood transfusion.

All staff
- All staff involved in transfusion are responsible for maintaining and updating their knowledge, competency and practice
- Medical staff are responsible for prescribing of blood components and/or blood products appropriate to the needs of the patient.

Medical staff are responsible for:
- Requesting blood using appropriate forms (follow local guidelines)
- Providing full information on transfusion request forms as defined by Trust Blood Transfusion Policy
- Explaining the risks and benefits of blood transfusion to patients
Perfusionists:
- Are responsible for using BloodTrack Tx to record final fate of red cell units used to prime equipment e.g. Bypass

Nursing, Midwifery and Theatre Practitioners staff are responsible for:
- Requesting collection of blood including arranging urgent transportation if required.
- Carrying out pre-transfusion checks to ensure the right blood is transfused
- Administer blood components and products
- Monitoring of the patient during transfusion
- Involving medical staff in the management of transfusion reactions
- Reporting of transfusion reactions or other incidents to the Blood Transfusion laboratory.

Phlebotomists and others taking blood samples are responsible for:-
- Checking the identity of a patient before taking any blood samples
- Checking information written on the request form is complete
- Using safe techniques for obtaining blood
- Correct labelling of blood sample tubes in accordance with the BT policy
- Reporting incidents.

Clinical Healthcare Assistants
- Do the patient’s vital signs at 15 minutes from start of transfusion and document them using BloodTrack Tx
- Inform the nurse looking after the patient if there are any changes in these vital signs
- Collect blood from the Blood Bank
- Receive blood components using BloodTrack Tx and other blood products

The Blood Transfusion laboratory is responsible for:-
- Compatibility testing and issuing of blood products
- Managing blood stocks and liaison with the National Blood and Transplant (NHSBT)
- Investigating adverse events and reporting them to Clinical Risk, the Serious Hazards of Transfusion scheme and the Medicines and Healthcare products Regulatory Authority.
- Monitoring blood requests and usage

3.1 Staff training and competency assessment for staff

All details related to relevant staff training in Blood Transfusion are outlined in the Trust Risk Management Training Needs Analysis.

The Trust recognises its responsibilities for relevant staff to be competent in the blood transfusion process and has identified the relevant competency requirements for all those involved in the transfusion process as per ‘Right Blood Right Patient’ Safer Practice Notice, No 14, 2006.

All details relating to the competency assessment of relevant staff are outlined in the document embedded in the Trust Training Needs Analysis

4 Operational flowchart of the Transfusion Process

This flowchart is a quick guide to the most important and essential stages in the clinical transfusion process. Appendix B is a print version of the flowchart
5 Procedure for obtaining consent for pre-transfusion blood samples

Consent must be obtained from the patient, guardian or next of kin. Verbal consent is sufficient but it must be documented in the Transfusion Record.

The ABC of BT consent:

A. In elective surgery consent for transfusion must be obtained at Pre-assessment
B. Non-surgical patients consent must be obtained before blood components are prescribed.
C. The patient must be given the NHS leaflet ‘Will I need a blood transfusion’, if they have not already received one.
   ● Where English is not the first language it may be necessary to provide an interpreter or translation of the leaflet.

Where consent is not possible, e.g. in emergency situations where the patient has no capacity to consent, it is a matter of clinical judgement of what is in the patient’s best interests. For further information please refer to Clinical BT Operational flowchart page 9 and Appendix C

5.1 Procedure for identification of patient

- The accurate identification of patients at all stages of the blood transfusion process is essential.
- All inpatients having a blood sample taken for a blood transfusion must be identified with a UHS identification band. Identification (ID) bands must comply with the UHS Patient Identification Policy.
- Positive patient identification must be used to ensure the correct ID band is secured to the patient prior to blood sampling or blood transfusion administration in the clinical area
- The ID band must be physically attached to the patient before the transfusion starts.
- Procedure for identification of unknown/unidentified patient. Please refer to the ‘Procedure for Registration of Emergency Patients requiring a Blood Transfusion’ on Staffnet

5.2 Procedure for the labelling of Group & Screen (G&S), Cross-Match (CM) and other blood transfusion samples

Patient details on the sample tube must be ‘hand written’ and MUST state all points as follows for the sample to be analysed. This does not apply when BloodTrack Tx is used. :

- Forename
- Surname
- Date of Birth
- UHS Hospital No. Or NHS No
- Date and Time blood sample taken.
- Signature of person taking blood.

4 core identifiers that must be identical on the sample tube, request card and patient ID band
Please handwrite the sample tube and request card legibly. The Blood Transfusion Department operates a ‘Zero Tolerance’ policy; samples that do not meet the above criteria will be rejected.

If the request card is being handed to someone else to take the sample, the request card must have an addressograph label or all 4-core identifiers clearly handwritten.

In extreme circumstances, where the sample can be positively identified with the PAS system despite one of the 4 core identifiers being missing, it may be possible to accept a sample provisionally if the clinician involved accepts liability.

This should be used as a last option if it is impossible to obtain a further sample in time for complete processing prior to transfusion due to physical or time constraints.

The sample will be provisionally processed to obtain a Group and Screen status whilst a new sample is taken. Ensure the requesting clinician understands it is of the utmost urgency to send a second sample. No components can be released until a second sample is received and the ABO/D group confirmed. If the antibody screen is negative on the first sample components will be released, as long as the second sample is labelled correctly.

A Trust ‘Adverse Incident’ report must be completed retrospectively by the Biomedical Scientist (BMS) involved.

BloodTrack Tx can be used to label a G&S and CM samples. Use the ‘Collect’ mode on the main menu screen and then follow the on screen instructions. The system will print two labels by default. One must be stuck on the sample tube and the other on the request card. To use this BloodTrack Tx you must be trained and assessed competent. Contact the BloodTrack Team for further information Bleep 2468 or 2319.

5.3 Unconscious and/or Unknown patients:

Please refer to the ‘Procedure for Registration of Emergency Patients requiring a Blood Transfusion’ on Staffnet.

5.4 Unborn foetus (for IUT):

BloodTrack Tx sample labels cannot be used for unborn foetus pre-transfusion samples. These sample tubes must always hand written:

- Surname = Surname of mother
- Forename = Foetus of ‘mothers forename’
- Hospital number = UB and then the 6 digits of mothers ID number from FMED database (twins use suffix e.g. UB111111A, UB111111B etc
- Gender as U
- Date and Time sample taken
- Signature of person taking blood

Please handwrite the sample tube and request card legibly. The Blood Transfusion Department operates a ‘Zero Tolerance’ policy; samples that do not meet the above criteria will be rejected.
5.5 Newborn babies and CORD samples

Do not use mother’s hospital number for baby’s cord sample. If this happens the sample will be rejected.

- Surname
- Forename if established or as M.I. or F.I. (for multiple births add Twin1, Twin 2, or Trip 1, Trip 2, Trip 3 etc)
- Hospital number (of baby)
- Gender
- Date of birth
- Date and time sample taken
- Signature of person taking blood

Please handwrite the sample tube and request card legibly. The Blood Transfusion Department operates a ‘Zero Tolerance’ policy.

5.6 Rejected Samples

- When a sample is rejected the person who filled out the request form (if known) or the ward will always be contacted to inform them of the ‘WRONG SAMPLE’. The sample will not be processed.

- In extreme circumstances, where the sample can be positively identified with the PAS system despite one of the 4 core identifiers being missing, it may be possible to accept a sample provisionally.

This should be used as a last option if it is impossible to obtain a further sample in time for complete processing prior to transfusion due to physical or time constraints.

The sample can be provisionally processed to obtain a Group and Screen status whilst a new sample is taken. The requesting clinician must understand it is of the utmost urgency that a new sample is sent. No components can be released until a second sample is received and the ABO/D group confirmed. If the antibody screen is negative on the first sample components will be released, as long as the second sample is labelled correctly.

A trust ‘Adverse Incident’ report must be completed retrospectively by the BMS involved.

- If a sample is rejected in an emergency situation and there is insufficient time to provide another sample, the ‘Emergency O Rh D negative’ blood should be used. O Rh D negative is ‘not inert’. If patients are known to have blood group antibodies other than anti-D or anti-K the blood will be incompatible in the majority of cases. This will be the decision of the clinician in charge of the patient. However, a report to Serious Adverse Blood Reactions and Events (SABRE) and Serious Hazards of Transfusion (SHOT) along with an internal adverse event will be made.

DO NOT use PAS addressograph labels or E- Quest to label sample tubes

DO NOT pre-label sample tube before going to the patient.

DO NOT move away from patient until you have written all four points of identification on the tube.
In an EMERGENCY another person may write in patient details on the sample tube however the person who took the sample remains responsible for information filled in.

5.7 Procedure for requesting blood components and products

- Transfusions of blood components and products (except for Albumin) must be requested from the Blood Transfusion laboratory on an individually named patient basis. Requests for blood will normally be made by medical staff, but it may be appropriate for non-medical staff to request blood in some circumstances, major haemorrhage. However only medical staff can prescribe blood components and products.
- Certain components, quantity of components and products must have the authorisation of the Haematologist Specialist Registrar (SpR) or the Consultant Haematologist. NovoSeven must be authorised by a Consultant Haematologist.
- All request forms must contain the following information especially the ‘Mandatory’ fields. If the Mandatory field is not completed the sample will be rejected.

<table>
<thead>
<tr>
<th>Consultant/GP code:</th>
<th>Mandatory field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward/Source code:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>UHS Hospital No. Or NHS No:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>Surname:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>Forename:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>Gender/sex:</td>
<td></td>
</tr>
<tr>
<td>Date of Birth:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>Date Taken:</td>
<td>Important to establish the validity of sample for use for cross-match</td>
</tr>
<tr>
<td>Time Taken:</td>
<td>Important in sequencing multiple daily sampling.</td>
</tr>
<tr>
<td>Taken by:</td>
<td>The person taking the blood sample is responsible for identifying the patient and putting the correct PID on the sample tube</td>
</tr>
<tr>
<td>Clinical reason for request:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>Quantity of Product:</td>
<td>Mandatory field</td>
</tr>
<tr>
<td>Special Requirements:</td>
<td>Cytomegalovirus sero-negative (CMV-ve), GY or XR Irradiated, Phenotyped red cells.</td>
</tr>
<tr>
<td>Ethnic origin:</td>
<td>Whilst this is not mandatory, information on ethnic origin is helpful when identifying antibodies. The gene frequencies governing red cell antigens vary according to ethnic origin.</td>
</tr>
<tr>
<td>Requesting Clinician’s signature and bleep No:</td>
<td>Mandatory field</td>
</tr>
</tbody>
</table>

5.8 Telephone requests:

Once the blood group is recorded on the laboratory computer system blood components such as FFP, cryoprecipitate, platelets should be ordered by telephoning Ext. 4620. The following information is required to process a telephone request:

- Forename
- Surname
- Date of Birth
- UHS Hospital No. /NHS No
• Please spell all names and surnames (requesters and patients)
• Certain blood components/products can only be ordered by telephone:
  • Fresh Frozen Plasma (FFP) or Octaplas (for all patients born after 1st January 1996)
  • Platelets
  • Cryoprecipitate
  • Prothrombin Concentrated Complex (PCC)& NovoSeven
  • Factor VIII, IX etc

Additional information required for:
• Fresh Frozen Plasma (FFP)  
• Platelets  

The following information must be provided:
  o Last coagulation results of the patient
  o Patients weight
  o Hospital Number/ PID number
  o Surname
  o Forename
  o Date of Birth
  o Location/ where blood is to be delivered
  o Clinician/Consultant
  o Reason for request/clinical details (Hb.level, Platelet count, Coag screen, TEG etc.)
  o Product required/quantity/special requirements
  o Name and contact number of requester and consultant in charge of patient.
  o Actual time blood is required

For red cells: If there is a valid group and save sample with a negative antibody screen held by the laboratory a telephone request can be made. For this purpose the following information must be provided:

  o Hospital Number/ PID number
  o Surname
  o Forename
  o Date of Birth
  o Ward or clinical area
  o Name of patient’s Consultant
  o Reason for request/clinical details (Hb.level and clinical symptoms)
  o Actual time component is required, number of units required and if there are any special requirements
  o Name and contact number of requester

• The details will be repeated to the requestor by the staff taking the call for confirmation.
• The name of the person taking the details in the laboratory will be recorded as well as the date and time of the telephone request.
• The telephone request form will be filed for five weeks from the time of the request.
• A further patient’s sample may be required depending on sample validity.

5.9 Sample Validity

• If a patient has had a transfusion or has been pregnant in the last 3 months, the sample must be less than 72 hours old at the beginning of the transfusion
6 Procedures for urgent samples, including out of hours, and Emergency O RhD negative red cells

6.1 Urgent samples

Inform the Blood Transfusion Laboratory (BTL) that an urgent sample is being sent. It is essential that the following information is provided;

- **Surname and Forename**
- **Date of Birth**
- **Hospital No. /NHS No.** (unique PID)
- **Clinical area**
- **Contact name and number of person making the request**

Request form must be completed and samples labelled in the same way as for non-urgent samples

- Very urgent samples maybe delivered directly to the BTL in person by a Healthcare professional to Pathology Specimen Reception on 'D' level South Block.
- Some clinical areas including ED and Critical Care have an ‘air tube’ transport facility (Select No 3 for the Haematology/Transfusion Laboratory)
- Samples from Princess Anne Hospital (PAH) are delivered to Pathology Specimen Reception, level D, by a PAH porter.
- Urgent samples from PAH should be clearly marked as urgent and should be sent with a pink card (urgent flag)
- It is necessary to telephone the BTL on extension 4620 prior to sending urgent samples. This is to prepare staff to expect the urgent sample and also to take appropriate action should the sample not arrive.

6.2 Emergency O RhD negative red cells

It is essential that a blood sample is collected for blood grouping and cross-matching before emergency O Rh D negative (EMO) blood is transfused to the patient.

Units of O Rh D negative blood are kept in the following satellite blood fridges:

- Emergency Department (Only adult units)
- D level, North Block ITU Laboratory (Adult and Paediatric units)
- E level Theatres (Only adult units)
- F level Theatres (Only adult units)
- PAH Theatre corridor (Only adult units)

**BloodTrack Tx must** be used to link and trace these units to the patient.

6.3 Blood required in 15-30 minutes from receipt of sample in the laboratory.

The BTL will provide uncross-matched blood of the same ABO and RhD group as the patient (type specific)

6.4 For blood required in 45 minutes or longer from receipt of sample in BTL

The BTL will provide fully cross-matched blood if antibody screen is negative
7 Patient’s transferred from other hospitals and acceptance of blood components from other hospitals

7.1 Acceptance of Blood components from other hospitals

Blood transported with a patient from another hospital is safe to administer as long as the transportation and storage conditions comply with the Blood Quality and Safety regulations, 2005.

1. When patients are transferred from another hospital do not remove the ID band, in case the blood accompanying the patient needs to be used immediately.
2. When blood arrives at Southampton General Hospital (SGH) or Princess Anne Hospital (PAH) in a box the BTL must be informed immediately.
3. If blood is to be used immediately, inform the BTL of its arrival and provide the details of the blood units and the patient details.
4. If blood has been used during transfer the box will no longer be sealed. The remaining blood can be used for up to four hours from when the box was first opened. If further blood is no longer required return it in the box to the BTL with all accompanying paperwork.
5. Remember to send all copies of blood transfusion documentation of units transfused during transfer to BTL
6. If more blood components are required for the patient, contact the BTL and send a sample for grouping and cross-matching. Remember to label samples for BTL as per BT policy to avoid any delays; incorrectly labelled samples will not be processed.
7. Blood components and products cannot be issued unless there is a valid sample in the BTL.
8. Samples taken from other hospitals that are incorrectly labelled will not be processed.

Under the Blood Quality and Safety Regulations, 2005, there is a legal obligation to be able to positively trace all units of blood components which are received in the Trust. Units sent with a patient become the Trust’s responsibility therefore the person accepting or retrieving the patient is responsible for the units received or transferred with the patient and for returning the documents communicating the final fate to the Blood Transfusion Laboratory

Units which arrive in the Trust which are incorrectly stored or transported must be marked as unsuitable for transfusion and returned to the BTL for disposal.

8 Written authorisation of blood components (prescription)

- All Blood components must have a written prescription by a doctor on the Transfusion Record.
- All transfusions must have a transfusion code (Tx code)
- Some patients may require special blood components e.g. CMV-negative, irradiated blood, etc (see below)
- Special blood components must be clearly prescribed on the Transfusion Record to allow the member of staff carrying out the final bedside identification checks to ensure that the blood to be transfused complies with any special requirements
The Transfusion Record must have the following:

- Surname
- Forename
- Date of Birth
- Sex
- Patient Identification Number

Use of Addressograph is strongly recommended.

The prescription must specify:

- Date of transfusion
- Blood component to be transfused e.g. red cells or platelets or FFP etc
- Special requirements e.g. CMV neg or irradiated
- Quantity to be transfused e.g. 1 unit, 30 mls
- Rate/duration of infusion – **Must be specific:** e.g. 3 hours or 50 mls/hr for red cells
  (Recommended rate 2-3 hours, maximum duration 4hrs for red cells)
  
  - 30 mins. for 1 unit Platelets
  - 30 mins. for 1 unit FFP

- Transfusion code
- Signature of prescribing doctor
- Printed name and surname of prescribing doctor

9  **Guideline for the use of Irradiated and CMV negative cellular components and other special products**

9.1  **Product Specification Selection**

All blood products provided by the National Health Service Blood & Transplant (NHSBT) are now leuco-depleted at source. Almost all have additional Rh and K phenotypes.

Some patients benefit from 'special' blood products (non-routine) that can be supplied to suit individual patient's needs.

9.2  **Special products can be divided into certain categories:**

- Gamma irradiated to prevent transfusion associated graft-vs-host disease (TA-GVHD), which is invariably fatal.
- Blood products from CMV sero-negative donors to give to immunocompromised or immunosuppressed patients who are found to be CMV sero-negative. This includes all patients who have had, or are imminently about to receive stem cell transplantation (SCT)
- Phenotyped units to prevent the potential allo-immunisation of some patients to red cell antigens. Appropriate selection can prevent problems during subsequent transfusions or pregnancies.
- If there is ever any doubt as to the particular needs of a patient, it is always appropriate to adopt the safest alternative, at least until the 'correct' approach is proven.
9.3 Requesting of Special products and supply

- The requesting clinician is responsible for indicating on the request form when gamma irradiated or CMV sero-negative blood products are required.
- The Blood Transfusion Laboratory will ensure the issue of appropriate products, dependent on availability, for all other indications. Again, the effectiveness of this will depend upon accurate and relevant clinical information being provided.

9.4 Indications for the use of irradiated components:

Gy or XRay irradiation does not affect the expiry date of platelets but can affect the expiry date of red cells.

It is not harmful to the administrator or the recipient.

- All donations from first or second degree relatives
- Allogeneic bone marrow/peripheral blood stem cell transplant recipients (See next page)
- Blood transfused to allogenic bone marrow DONORS 7 days prior to or during harvesting.
- Autologous bone marrow/peripheral blood stem cell recipients. (See next page)
- All patients with Hodgkin’s Disease (During treatment & thereafter)
- All patients with hairy-cell leukaemia (During treatment & thereafter)
- All patients treated with purine analogue drugs, including fludarabine, deoxycoformicin (pentostatin), cladribine, clofarabine and bendamustine (discuss with Pharmacy)
- Recipients of HLA-matched platelets/components, even if patient is immunocompetent
- All granulocyte components
- Patients receiving immunosuppressive therapy with anti-thymocyte globulin (ATG)
- Patients receiving the biological anti-CD52 immunosuppressive agent alemtuzumab (Campath)
- All severe T cell congenital immunodeficiency disorders

9.5 Irradiated blood components are not required for:

- Patients undergoing routine surgery
- Patients with solid tumours
- Patients with HIV infection or autoimmune diseases.
- After solid organ transplantation unless Alemtuzumab has been used in the conditioning therapy

9.6 CMV sero negative components

Leucodepleted products are considered CMV safe. However the NHSBT still recommend that cellular blood products are obtained from CMV sero-negative donors to prevent the transmission of CMV via transfused donor lymphocytes.

Until there is total confidence in leucodepletion to prevent the transmission of CMV infection by transfusion, CMV sero-negative cellular blood products MUST be given to the following immunosuppressed or immunocompromised patients:

- Patients with congenital immunodeficiencies
Patients who are CMV sero-negative who may require, or have received, haemopoietic stem cell transplantation. If a patient’s CMV status is unknown, they should be considered as CMV sero-negative until proven otherwise.

- Any patient with aplastic anaemia or unexplained pancytopenia
- Pregnant women, antenatal or in labour, not required for postnatal transfusions
- HIV positive patients

10 Bone Marrow and Peripheral Blood Stem Cell transplants

10.1 Adults and Paediatrics

10.2 CMV negative products

- Having had, or imminently about to receive peripheral stem cell transplantation (PBSC)

- If there is ever any doubt as to the particular needs of a patient, it is always appropriate to adopt the safest alternative, at least until the ‘correct’ approach is proven.

- The requesting clinician is responsible for indicating on the request form when CMV sero-negative blood products are required.

10.3 Irradiated blood products

Irradiated blood products should be given to certain categories of patients to avoid allosensitisation or TA-GVHD (transfusion associated graft-versus-host disease).

10.3.1 Specific Haematological Malignancies

- All patients with Hodgkin’s disease: during and after treatment & thereafter.
- All patients with hairy-cell leukaemia
- Most congenital immunodeficiency disorders.

10.3.2 Specific indications for Bone Marrow (BM) and PBSC

- For 2 weeks before all types of stem cell transplant (SCT) & during conditioning (whichever is longer)
- Allogeneic SCT: for at least 6 months after SCT or until all immunosuppressive treatment has been discontinued, whichever is later. In practice it is difficult to determine when specific patients are immunocompetent. All patients should receive irradiated products indefinitely post allogeneic SCT. The decision to stop using irradiated products must be taken by a Transplant Physician.
- Autologous SCT: for 3 months after SCT unless total body irradiation (TBI) has been used in which case it is 6 months.
- After SCT in Stem Cell Immune Deficiency (SCID) for at least 12 months after SCT or until normal immune function restored.
Stem cell collection: 7 days prior to harvesting (BM or PBSC) – to prevent the collection of viable allogeneic T lymphocytes, which could withstand cryopreservation.

All bone marrow donors

Patients receiving fludarabine: for at least 2 years after or until full recovery of immune function (& other purine analogues- cladaribine & deoxycofomycine)

Patients receiving HLA matched platelets

GX or XR irradiation does not affect the expiry date of platelets. Red cells for top-transfusion should be transfused within 14 days of irradiation.

10.3.3 Patients on the following drug treatment will require irradiated cellular components:

- Bendamustine
- Clorfarabine
- Alemtuzumab
- Fludarabine
- Cladaribine
- Deoxycofomycine

10.3.4 Post Transfusion clinical outcome

- Following a red cell transfusion a FBC should be performed, ideally 6 hours post transfusion and the clinical outcome documented in patient's medical notes

- If products for the correction of coagulopathy have been given a clotting screen should also be done (approximately at 30 minutes).

- Clinical outcome should be recorded during hospital stay and after discharge from hospital.

11 Process for the administration of blood components

11.1 Before requesting delivery of a blood component ensure that the patient is ready for transfusion:

1. Check the blood component is prescribed for your patient by cross-referencing their surname, first name, date of birth and hospital number as indicated on the prescription, with the information on their identification wristband.

- Make sure that there is venous access and that it is patent.
- If patient has a raised temperature ensure that the doctors still want to transfuse. Do not send for blood components/products until this is clarified.
- Prepare to take and record baseline observations to upload to BloodTrack Tx with the 'Begin Transfusion' mode
  i. Temperature
  ii. Pulse
  iii. Blood pressure
  iv. Respiratory rate
  v. Oxygen Saturation (Optional)
11.2 Preparing the patient for a transfusion

- Blood components can be administered through peripheral intravenous cannula or most central lines (according to manufacturer’s specifications).
- The size of the peripheral cannula depends on the size and integrity of the vein and the speed at which the blood component is to be transfused.
- When multi-lumen central venous access devices are used it is generally safe to co-administer other therapeutic solutions through a different lumen as rapid dilution occurs in the bloodstream.
- Infusion pumps may be used for transfusions and are used to achieve optimal flow. They must be used according to the manufacturer's instructions.
- All giving sets should be primed with the blood product being transfused.
- Do not prime the giving set with Sodium Chloride 0.9%, unless prescribed to be infused slowly to maintain venous access.
- Giving sets should be changed at least every 12 hours.
- If platelets and red cells are to be transfused give platelets first.
- **Do not** transfuse platelets through a giving set that has previously been used for red cells or other blood component as this may cause aggregation and retention of platelets in the line.
- It is strongly recommended that platelet-giving sets be used because they are shorter and less platelets are left in the line at the end of a transfusion.
- All blood components MUST be transfused through a sterile giving set designed for this procedure with integral mesh filter 170-200μm pore size.
- Giving sets with burettes should **not** be used for the transfusion of blood components/products.

**Pressure devices**: In large volume transfusions, the use of a pressure device is recommended. The maximum pressure that should be applied to a blood transfusion pack is 300mmHg and they **must monitored at all times when in use**.

**Blood Warmers**: Blood should only be warmed using a specifically designed commercial device with a visible thermometer and audible warning alarm. The manufacturer’s instructions must be followed.
- Blood must not, under any circumstances, be warmed using any other measures.
- Blood warmers are indicated if:
  - The flow rate is >50 ml/kg/hr for adults.
  - The flow rate is >15 ml/kg/hr for children and for exchange transfusion in infants.
  - The patient has severe cold agglutinin disease where cold agglutinins may be clinically significant.

11.3 Compatible Intravenous solutions

- No other intravenous fluids should be co-administered via the infusion line that is being used for blood components. Intravenous solutions which contain calcium may antagonise citrate anticoagulant and allow clots to form in the blood component. Examples of intravenous solutions containing calcium:
  - Ringer Lactate
  - Haemaccel
  - Gelofusine
- Hypotonic intravenous solutions, e.g. 5% dextrose in water may cause haemolysis of red cells.

12 Blood Track Courier (Collection of blood)

- **All staff must be trained and assessed competent** to use BloodTrack Courier.
• Only after training and a successful competency assessment will the barcode on the staff members UHSFT identification badge be activated. All blood transfusion satellite blood fridges are controlled via BloodTrack Courier. Any unauthorised staff cannot access the Blood Transfusion satellite blood fridges.

• Do not lend your badge to any other member of staff and do not ask a member of staff to lend theirs to you. This goes against data protection and is a disciplinary offense.

• All blood components must be transported in a ‘Blood in Transit’ provided by the Blood Transfusion Laboratory

12.1 To request porter delivery of blood components

• Red cells are delivered 24/7
• Platelets, FFP and Cryoprecipitate are only delivered between 20:00-08:00

a. To request Porter delivery of blood components to the clinical area TeleTracking must be used. Even in an emergency

b. First check on BloodTrack Enquiry to see if the blood component (s) has been issued and to identify the current storage location.

12.2 From 08:00 to 20:00

• Ward staff must collect Platelets, FFP and Cryoprecipitate from the Blood Transfusion Laboratory, (D level, end of South Block Corridor)

a. First check on BloodTrack Enquiry to see if the blood component (s) has been issued and to identify the current storage location.

b. Print a Pickup slip using a PDA and go to the appropriate fridge.

c. Scan your ID badge at the BloodTrack kiosk and then follow on screen.

d. If a pickup slip is not available a search patient manual option is available. However for this four points of patient identification is required.

13 BloodTrack Tx – General Information

BloodTrack Tx personal digital assistant (PDA) Main menu screens

• Collect: This mode can be used to print a label for a sample tube and the blood transfusion request card when taking a sample for Group and Screen or Cross-match.

• Pickup slip: The pickup slip is printed at the patient’s side using the patient’s ID band and the PDA. The pickup slip facilitates the collection of red cells from the satellite blood fridges by using barcodes which contain the four points of patient identification. A pickup slip must be printed by the ward for the collection of blood components from a satellite fridge or the Blood Transfusion dept. Porters use TeleTracking to collect blood components

• Arrival (s): Acknowledges the receipt of a blood component (s) to the clinical area by a member of ward staff. The name of the patient on the compatibility tag attached to the unit must also be visually checked to ensure that the unit (s) are being delivered to the correct ward/clinical area (BloodTrack will not do this) This mode must also be used when patients are transferred with blood components but the transfusion of these have not commenced. The receiving area must ‘arrive’ the blood component, e.g. ED to endoscopy. If a patient is transferred with red cells these should be stored immediately in the nearest Blood Satellite fridge by the receiving clinical area, e.g. ED to Theatres
A. **Begin Transfusion:** Checks that the right component and unit is about to be administered to the intended recipient. It must also be used to record baseline observations and the commencement of transfusion. *BloodTrack Tx is not a decision making tool.*

B. **Vital signs/Reaction:** This mode is used to record the 15 minute observations from start of transfusion or for the recording of reactions. If the patient has a transfusion reaction and the clinical decision is to discontinue the transfusion the unit must be ended by using *End Transfusion*

C. **End Transfusion:** Records the end of transfusion (final fate of unit), *this is a legal requirement (BSQR, 2005).* This mode will also record the end of transfusion observations; the volume transfused and gives the option to commence another unit for the same patient.

![Main Menu](image.png)

Tapping Transfuse on the Main Menu will open the Transfuse screen. *Continue to use the BloodTrack PDA even if the printer is not working. The PDA will upload the data via the UHS wireless network even if labels do not print.*

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14 **Receipt of Blood components in the clinical area**

When blood components are delivered to the clinical area by a porter or a Medical Laboratory Assistant this must be acknowledged by a member of ward staff.

1. First check the name of the patient on the compatibility tag attached to the unit. Emergency O RhD negative blood will not have a compatibility tag.
2. Acknowledge receipt by using the ‘Arrive’ mode on the BloodTrack Tx personal digital assistant (PDA)
3. When a Healthcare Assistant from the clinical area goes to collect a blood component the nurse responsible for administering the transfusion must ‘Arrive’ the unit (s).
4. If a patient is transferred from one clinical area to another with a unit (s) that has not been commenced, the receiving healthcare professional (registered nurse, registered midwife, doctor or theatre practitioner) must ‘Arrive’ the blood component (s).

15 **Administration of Blood Components using BloodTrack Tx PDA (routine and emergency transfusions)**

- **BloodTrack Tx** (final bedside check- clinical area) must be used to Administer Red Cells, FFP, Platelets and Cryoprecipitate – In routine and emergency transfusions
- If BloodTrack Tx PDA is not used to record all units of blood transfused at UHSFT a non-compliance letter will be sent to the ward sister who is then responsible for completing the information requested in the non-compliance letter.
If the BloodTrack team does not receive a response to the non-compliance letter a red adverse incident report will be raised.

If there is still no response to the AER the ward sister and matron for the clinical area will be asked to present a root cause analysis to the **Unknown Final Fate of Unit panel**

### 15.1 Blood Administration Using BloodTrack Tx (PDA) — Single checking.

- All staff **must be trained and assessed competent** to use BloodTrack Tx
- Only after training and a successful competency assessment will the barcode on the staff members UHSFT identification badge be activated. Any unauthorised staff **must not** use the BloodTrack Tx PDA.
- **Do not lend your badge** to any other member of staff. This goes against data protection and is a disciplinary offense.
- BloodTrack Tx **cannot** be used to administer Octaplex

a. **The patient must be wearing a bar-code ID wristband.**
   - If not, one **must** be generated using PAS. It is **vitally** important that care is taken to ensure the correct wristband is attached to the right patient. Prior to attaching the ID band, confirm patient identification.
   - **Do not transfuse** any blood component to a patient if the ID band is not physically attached to the patient.

b. **Begin Transfusion**: Starting point for all elective transfusions (Final bedside safety check and Baseline observations)

   **Always follow on screen instructions.**

1. Turn on the PDA and select the ‘**Transfusion**’ option by tapping on the screen using your finger or a suitable stylus. **Do not use a pen.**
2. This will open a new menu, choose ‘**Begin Transfusion**’.
3. Scan the barcode on your UHSFT ID badge.
4. Scan the patient’s identification from the square barcode on the patient’s ID band.
5. Confirm patient identification by asking the patient to **state** their surname, first name, and date of birth. If the details correlate with those on the PDA screen, tap **Next**.
6. Scan the **square** barcode printed on the compatibility label on the blood bag
7. On the PDA screen check that the patient’s name and hospital number scanned from their wristband (displayed on the lower half of the screen) correlate with the name and hospital number scanned from the compatibility label on the blood bag (displayed on the top half of the screen) tap **Next**.
8. Scan the blood unit number, highlighted on the PDA screen with a green flashing square.
9. Scan the product code which is situated just below the blood unit number, also highlighted. The component details being checked will appear on the screen.
10. The PDA will then display the unit number taken from the compatibility tag in the top half of the screen and the unit number taken from the unit label it in the lower half of the screen. Visually check that these unit numbers match then select next.
11. **If there is a mismatch at any point of the process the screen will alert the user by turning yellow. If the user taps Next an audible alarm will sound to alert the user not to proceed**
12. If there is no mismatch warning the system will then display the option to check more units if needed (e.g. FFP) by selecting another unit. Only scan additional units if these are to be used immediately (for example FFP and red cells at the same time or
if a patient is receiving an emergency blood transfusion comprising of several units stat). Continue with the loop until the required numbers of units have been checked.

If checking only one unit, tap Next.

13. You are presented with a final checklist. Go through and ensure you have performed all the required checks then tick each box to confirm you have carried out all the safety checks. All boxes must be ticked to proceed. Tap Next.

14. Enter the pre-transfusion (baseline) observations starting with temperature by tapping on the screen with the appropriate results on completion tap Next.

15. If you make a mistake on entering the observation use the ‘clear’ button on the screen key pad. Do not use ‘Cancel or Back’ tabs at the bottom of the screen. This will delete the transaction.

16. The final page confirms that all safety checks prior to commencement of the transfusion have been completed and recorded.

17. Connect the PDA to the portable printer.

18. Press Print and a label is printed which needs to be secured in the patient’s Transfusion Record.

19. If the printer has run out of labels or will not print continue with the next step. Handwrite the patient’s observations in the Transfusion Record. The whole transaction will upload to the Trust wireless network even if labels do not print.

20. Press DONE.

21. Sign the prescription chart and connect the giving set to the unit. If the bag gets accidentally pierced by the giving set ring the BloodTrack helpdesk, ext: 8019. Give them the Unit number (14 digits), the patient’s Hospital Number, Full name and date of birth. A trust Adverse Incident Report needs to be completed.

22. Commence the transfusion.

### 15.3 Care of the patient receiving a blood transfusion

#### 15.3.5 Monitoring the patient:

- The patient, if conscious, should be asked to report any potential adverse effects including shivering, rashes, flushing, shortness of breath, and pain in extremities or loins.
- Under no circumstances should any drug be added to a blood component or product.
- Non-urgent transfusions of blood components or products should not be performed overnight unless absolutely necessary.

#### 15.3.6 Rate of Transfusion:

- The infusion rate for the first 15 minutes needs to be slow, for example half the prescribed rate.
- If there is no change in patient’s condition after 15 minutes, increase to prescribed rate.
- In an emergency this rule is not applicable.

#### 15.3.7 Scheduled observations:

- Observations during transfusion need to be performed and recorded 15 minutes from the start of the transfusion. Most moderate to severe acute reactions occur within the first 15 minutes of a transfusion.
Along with this set of observations ask the patient if they feel any change in condition.

Visually check the patient for any signs of change in their condition.

The last set of observations is performed at the end of each unit.

It may be necessary to perform observations more frequently if the patient has had a reaction to a transfusion in the past.

Depending on the clinical area where they work Health Care Assistants (HCAs) are permitted to do the observations for a blood transfusion but they must report all results to the registered nurse looking after the patient, as the responsibility of the transfusion observations remains with the registered nurse. The same goes for nursing students and medical assistants. Student nurses cannot use BloodTrack Tx to record observations.

15 minute observations/vital signs must be recorded on the BloodTrack Tx PDA, see section 12.7.

The following abbreviations can be used to record certain observations on the TR:

- ‘V’ for ventilated patients
- ‘W’ for patients being actively warmed
- ‘C’ for patients being actively cooled
- ‘P’ for paced patients

Further observations should be performed when or if the patient becomes unwell or shows signs of an adverse reaction to the transfusion.

Unconscious patients can be difficult to assess for signs of adverse reaction to the transfusion and must be closely monitored during the first 15 minutes of each unit for any visual or vital sign changes.

It is important to observe the patient at regular intervals during any blood transfusion. Also, ensure that the patient is aware of the need to alert a member of staff if they feel unwell and/or anxious.

### 15.4 Summary of observations required for a Blood Transfusion

<table>
<thead>
<tr>
<th>One Unit</th>
<th>Two Units and more</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline Observations</strong></td>
<td><strong>Baseline observations (taken at the end of transfusion of previous unit)</strong></td>
</tr>
<tr>
<td>At 15 minutes following start *</td>
<td>At 15 minutes following start of each unit *</td>
</tr>
<tr>
<td>At end of transfusion (this will form the baseline observations for 2nd unit etc.)</td>
<td>At the end of each unit.</td>
</tr>
</tbody>
</table>
15.5 Changing giving sets:
- Change the giving set if the transfusion episode has run for 12 hours in order to prevent bacterial growth
- Use a new giving set if another infusion is to continue after the transfusion. Do not use the same giving set for other blood components

15.6 ‘Vital signs/reaction’ (15 minutes Observations)
1. To record the 15 minute observations from start of transfusion.
2. If the patient suffers a transfusion reaction, all observations for the transfusion reaction must be.
3. Patients on ECMO the number ‘2’ should be used to indicate observations that are not recordable

15.7 ‘End of Transfusion’
To record the final fate of the unit or units. It is an important stage of traceability and it is a legal requirement.

Unit not transfused; if for any reason the unit is not transfused but the giving set has already been attached ring the BloodTrack helpdesk on ext: 8019

Disposal of empty packs:
Empty packs should be kept on the ward until the current transfusion episode is complete. If the patient’s observations have remained the stable and no signs of an adverse reaction have been noted the empty packs maybe disposed of in ward clinical waste.

15.8 BloodTrack Tx not operational/downtime.
In the event that BloodTrack Tx system is not operational the Blood Transfusion Laboratory will alert the UHSFT control centre and it might be necessary to revert to a paper system for traceability and double checking.

Clinical Contingency Plan – for when the clinical area fails to use BloodTrack
An A4 document of the clinical BloodTrack Contingency Plan has been sent to all matrons for distribution to relevant staff. A copy of the plan is in Appendix E of this policy.

15.9 Important instructions to maintain BloodTrack PDAs in good working order.
1. Remember to replace PDA in the cradle after use and check that charging light comes on
2. Remember to charge printer by plugging the cable into the printer.
3. The clinical area is responsible for the loss or misuse of the equipment and will be responsible for purchasing replacements.
4. Never unplug charging cradle or printer charger from wall electric socket as the BloodTrack team have put in these sockets for the exclusive use of BloodTrack equipment.
5. Remember to follow hand washing policy before using this equipment and keep equipment clean.
6. Every BloodTrack Tx PDA must be checked at the beginning of every shift. This is done by pressing the orange and black button on the charging unit while the PDA is docked. The PDA screen should come on and display the main menu screen
1. Turn on the PDA and select Transfusion option by tapping on the screen using your finger or a suitable stylus. **Do not use a pen.**
2. Scan the barcode on your UHSFT ID badge.
3. Scan the patient’s identification from the square barcode on the patient’s ID band.
4. Confirm patient identification by asking the patient to **state** their surname, first name, and date of birth. If the details correlate with those on the PDA screen, tap **Next**.
5. Choose **Transfusion** from the menu list.
6. Then choose **Emergency Transfusion** on PDA screen
7. If using cross-matched blood in an emergency Scan the barcode (three squares) on the compatibility label

8. If using Emergency O RhD negative blood, tap ‘Emergency blood’. Never use this tab for cross-matched blood as all the programmed safety aspects will be bypassed.

9. Then follow on-screen instructions

17 Safety Alerts on BloodTrack Tx

- If BloodTrack Tx alerts you to a mismatch between details on the compatibility label and the details on patient ID band, do not proceed.
- If BloodTrack Tx alerts you to a mismatch between compatibility label and blood unit label, do not proceed.
- Mismatches are first highlighted in yellow on the PDA screen.
- If this first warning is ignored and the ‘Next’ button is tapped to proceed the PDA will issue an audible alarm.

17.1 Procedure to follow if there is a mismatch

Call the Transfusion Laboratory on ext 4620

If the need for blood transfusion is very urgent (blood needed within 5 minutes) and no Cross-matched blood is available, use of emergency O RhD negative should be considered in preference to the mislabelled blood.

This advice applies to all cases of mismatches between details on the blood pack, compatibility label and/or the patient's wristband.
18 Investigation and Management of Acute Transfusion Reactions

The 2012 BCSH Guideline on the Investigation and Management of Acute Transfusion Reactions provides clear guidance on the recognition, investigation and management of acute adverse reactions to blood components. The UHSFT Blood Transfusion policy is based on the BCSH guidelines. The emphasis is on the immediate management of potentially life-threatening reactions but it also makes recommendations about appropriate investigation.

Use Page 4 of the Transfusion Record (2013 version) and the Operational flowchart for the Transfusion Process to manage an acute transfusion reaction.

18.1 Acute Transfusion Reactions (ATR)

- Defined as any reaction that occurs within 24 hours post transfusion of any component.

18.1.8 Recognition of acute transfusion reactions

- Initial treatment of ATR is not dependent on classification but should be directed by symptoms and signs. Treatment of severe reactions should not be delayed until results of investigations are available.
- All patients should be transfused in clinical areas where they can be directly observed and where staff are trained to administer blood components and the management of transfused patients.
- Patients should be asked to report symptoms and signs which develop within 24 hours of completion of the transfusion.

18.1.9 Immediate management of ATR

- If the patient develops new symptoms or signs during the transfusion, this should be stopped temporarily, but venous access maintained.
  1. Identification details should be checked between the patient, their identity band and the compatibility tag on the blood component.
  2. Perform a visual inspection of the component.
  3. Assess the patient with standard observations.
  4. For patients with mild reactions, such as pyrexia (temperature of ≥ 38°C and rise of 1-2°C) and/or pruritis or rash but without other features, the transfusion may be continued with appropriate treatment and direct observation.
  5. Patients with mild isolated febrile reactions may be treated with oral paracetamol (500-1000mg in adults).
  6. Patients with mild allergic reactions should be treated with an antihistamine and the slowing the rate of the transfusion.
  7. Anaphylaxis should be treated with intramuscular Epinephrine (Adrenaline) according to the UKRC guidelines. Patients with Thrombocytopenia or who have deranged coagulation should also receive intramuscular epinephrine if they have an anaphylactic reaction.
  8. If the patient being transfused for a haemorrhage develops hypotension, careful clinical risk assessment is required. If hypotension is caused by haemorrhage (external or internal), continuation of the transfusion might be life saving. In contrast, if the blood component is considered the most likely cause of hypotension, the transfusion must be stopped or switched to an alternative component and appropriate management and investigation commenced.
18.1.10 Subsequent management of the patient

1. Patients who have experienced anaphylactic reactions associated with transfusion must be discussed with an allergist or immunologist, in keeping with UKRC guidelines.

2. For patients with recurrent febrile reactions, a trial of premedication with oral paracetamol given an hour before the reaction is anticipated.

3. Patient reactions which consist predominantly of chills and rigors non-steroidal anti-inflammatory drugs may be considered but an assessment of the risks of medication and the severity of the reaction should be made in each case.

4. Patients who continue to react should have a trial of washed blood components. This should be discussed with a Haematologist.

5. For recurrent mild allergic reactions, there is no evidence to support routine prophylaxis with antihistamine or steroids. Alternative causes such as allergy to drugs or latex gloves should be excluded.
Labelling of group and screen, cross-match samples:

1. Labelling samples of ‘unknown’ patients refer ‘Procedure for Registration of Emergency Patients requiring a Blood Transfusion’ on Staffnet
2. Estates Business Continuity Policy
3. Unborn foetus refer to section 5.4 f Blood Transfusion (BT) policy
4. Newborn babies and cord samples refer to Neonatal policy

For further information refer to section 5 in the main BT policy
Ordering of blood components:

Red cells

The UHS Blood Transfusion Laboratory (BTL) must have a valid pre-transfusion sample to issue type specific or fully compatible cross-matched blood.

Sample validity:
- Last transfusion or pregnant in the last 3 months, sample must be < 72 hours old at the beginning of the transfusion.
- Patient not transfused or pregnant in the last three months the transfusion sample is valid for 7 days.

Group and screen sample with a negative antibody screen (check status on e Quest before ringing the BTL) can be converted to a cross-match if sample is valid. Phone x4620
Estimated time of issue 10 minutes.

Cross-match request card: The following information must be filled in:
- 'number of units'
- 'date required'
- 'time required'
- 'Special requirements'
- Red cells will be issued and delivered to the satellite blood fridges according to the clinical area written on the request form.

- It is the responsibility of the requester to state if the patient requires irradiated red cells or platelets (special requirements).
- It is the responsibility of the Clinical area to check on BloodTrack enquiry to see if blood components have been issued.

Refer to delivery of components on page 3 of this document

Platelets, Fresh Frozen Plasma, Octaplas and Cryoprecipitate

(Octaplas must be prescribed and requested as ‘Octaplas’ for patients born after 1st January 1996)

1. The UHS Blood Transfusion Laboratory (BTL) must have a blood group for this patient on LabCentre to issue the above components.
2. All these components are ordered via telephone requests on a named patient.

For further information refer to section 5.7 in the main BT policy and refer to delivery of components on page 3 of this document.
Prescription of Blood Components:

1. All blood components **must** have a written prescription. There are **no** exceptions.

2. Blood components **must** be prescribed on the Transfusion Record in units e.g. 1 unit rbc (red blood cells), 1 unit platelets, 3 units FFP (fresh frozen plasma) etc

3. Indication of Transfusion Codes **must** be used to indicate reason of transfusion in adults.

**Delivery of Blood Components**

Components are delivered according to the table below:

<table>
<thead>
<tr>
<th>Clinical Areas eligible for delivery</th>
<th>Delivery Schedule of blood components</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3, C4, C6L, C6T, C7H, D3H and Acute Medical unit (AMU)</td>
<td>Every hour 08:00 to 20:00 by Medical Laboratory Assistant (MLA)</td>
</tr>
<tr>
<td>Theatres, ED &amp; ICUs</td>
<td>Ad hoc 08:00 to 20:00 by MLA</td>
</tr>
<tr>
<td>Cardiac and Surgical High Dependency, AMU and Endoscopy and Out Reach Team</td>
<td>In an emergency 08:00 to 20:00 by MLA</td>
</tr>
</tbody>
</table>

**Not eligible for MLA delivery: All other wards**

1. To request **Porter** delivery of blood components to the clinical area use **TeleTracking** see schedule below. First check on **BloodTrack Enquiry** to see if blood components have been issued and their current storage location.
   - Red cells are delivered 24/7
   - Platelets, FFP and Cryoprecipitate are only delivered between 20:00-08:00

2. **Collection by ward** from 08:00 to 20:00 for Platelets, FFP and Cryoprecipitate from the Blood Transfusion Laboratory, (D level, end of South Block Corridor)

All clinical areas **must** acknowledge the receipt of blood components delivered by the Portering Department or by a Medical Laboratory Assistant (MLA). This is done by:

1. Checking the name of the patient on the compatibility tag.

2. Use the ‘Arrive’ mode on the BloodTrack Tx personal digital assistant (PDA) to finalise the receipt of blood component to the clinical area.

**Collection of blood components by the clinical staff**

1. In order to collect red cells from a satellite blood fridge or a blood component from the Blood Transfusion Laboratory (BTL) you must be trained and assessed as competent to use BloodTrack Courier. Once trained the staff barcode ID badge will be activated to permit access to the satellite blood fridge.

2. **NEVER** lend your badge to another member of staff or student.

3. Follow the instructions on the BloodTrack Courier kiosk.

*For further information refer to section 12 in the main BT policy*
Administration of Blood Components

Always use BloodTrack Tx PDA

1. Make sure the PDA is not in training mode.

2. Choose a mode and follow on screen instructions until the last screen which will ask you to tap on ‘done’ to complete the transaction. If you do not complete the full transaction the transfusion will not be recorded on BloodTrack

<table>
<thead>
<tr>
<th>BloodTrack Tx:</th>
<th>Corresponds to the following actions in each step:</th>
</tr>
</thead>
</table>
| Step 1: ‘Begin Transfusion’ | 1. Records the Healthcare Professional administering the blood component  
                                  2. Compares the patient details from the square barcode on the ID band to the square barcodes on the compatibility tag (CT) which is attached to the blood component. If the information is not identical the PDA will produce an audible alarm.  
                                  3. Compares the CT to the unit number (linear barcode on the unit label) and the product code  
                                  4. Record baseline observations  
                                  5. Attach the giving set to the bag and then to the patient’s venous access  
                                  6. Start the transfusion |
| Step 2: ‘Vital signs/Reaction’ | 1. Records the Healthcare professional doing the observations  
                                 2. Observations at 15 minutes from start of transfusion.  
                                 3. To record patients’ observations in the event of a transfusion reaction |
| Step 3: ‘End Transfusion’ | 1. Records the person who is taking down the unit and the administration of another unit to the same patient, if there is one.  
                                2. Record the end observations for the unit being ended and records the observations for the next unit, if there is one. |

For further information refer to sections 13, 14 and 15 in the main BT policy
Process for obtaining blood components in an Emergency

**Red Cells**

**A Valid Sample**
Must have 4 points of identification all of which must be identical on eCamis, the request card, sample tube and patient's ID band
- Surname
- Forename
- Date of birth
- Hospital number or NHS number
- Date and time sample taken
- Signature of person who took the sample

**Valid Sample in the UHS BT Lab**
Order **type specific**: 4 to 6 units of type specific red cells can be issued in 15 minutes.
As soon as these are issued they will appear on BloodTrack inquiry
The clinical area must arrange collection and delivery of blood components.

**No Valid Sample in the UHS BT Lab**
Use **Emergency red cells**
- 2 units in E level and F level fridges
- 2 units D level fridge
- 6 units ED fridge
- 4 units PAH fridge
*Please inform the BT lab on ext 4620 immediately in order to re-stock*
- To collect the healthcare professional must be trained and assessed component to access BloodTrack Courier.
- To request collection by Porters use TELETRACKING.
- Arrive and administer the blood component using the BloodTrack PDA

**Fresh Frozen Plasma (FFP) and Cryoprecipitate**

1. If thawed FFP is available it will take 10 minutes to issue
2. Thawing time for 4 units of FFP is 30 minutes.
3. Thawing time for Cryoprecipitate is 20 minutes

**Platelets (Non-irradiated)**

1. If available in the BTL it will take 10 minutes to issue
2. If platelets need to be ordered from the NHS Blood and Transplant Service (NHSBT) it can take up to 45 minutes or longer depending on availability.

**Availability, Collection and Delivery** - if you are not familiar with this process ask a member of ward staff. Availability of blood components will be shown on BloodTrack Enquiry. **Do not phone** the BTL unnecessarily

*For further information refer to section 6 and 12 in the main BT policy*
Administration of blood components in an Emergency

1. Choose ‘Emergency Transfusion’ from Transfuse Mode

2. If administering **Emergency O negative** red cells tap

3. If administering cross-matched blood or type specific in an Emergency (stat) scan the 3 square barcodes on compatibility tag (scan only once, this will capture all 3, which have identical data)

4. Follow the instructions on the PDA screen

5. To return to the screen which has the option to transfuse EMO or cross-matched/type specific blood, choose the option ‘No’ when you reach the screen below

*For further information refer to section 16 in the main BT policy*
Recognition of acute transfusion reactions, initial management and subsequent management and investigations

Patient exhibiting possible features of an acute transfusion reaction, which may include:
fever, chills, rigor, 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 label, visually assess unit.

If Evidence of:
Life-threatening Airway and/or Breathing and/or Circulatory problems and/or wrong blood given and/or evidence of contaminated unit

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: TPR, BP, urinary output, O₂ saturations
- 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 Blood Transfusion Laboratory (BTL)
- Return unit (with administration set) to BTL.
- Perform appropriate investigations

MODERATE:
- Temperature ≥39°C or rise ≥2°C and/or
- chills, rigors, myalgia, nausea and vomiting and/or loin pain
- Consider bacterial contamination if the temperature rises as above and review patient’s underlying condition and transfusion history, consider appropriate symptomatic treatment e.g. antibiotics, paracetamol etc
- Monitor patient more frequently: TPR, BP, O₂ saturations, urinary output

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

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

- Consider symptomatic treatment (Paracetamol and/or Chlorphenamine)
- Continue transfusion at a slower rate
- Monitor patient frequently as per moderate reactions
- If symptoms/signs worsen manage as moderate/severe reaction (see left)

Inform medical team

Inform medical team
# RECORD TRANSFUSION REACTIONS ON BLOODTRACK Tx (PDA ‘vital signs/reactions’)

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Investigations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever (≥2°C rise or ≥39°C) and/or chills, rigors, myalgia, nausea and vomiting and/or loin pain</td>
<td>*Standard investigations DAT, LDH and haptoglobin Blood Cultures, coagulation screen. Do not discard unit. If febrile reaction sustained return unit to BTL. If loin pain perform U&amp;Es</td>
</tr>
<tr>
<td>Mucosal swelling (angio-oedema)</td>
<td>*Standard investigations measure IgA levels.</td>
</tr>
<tr>
<td>Dyspnoea, wheeze or features of anaphylaxis</td>
<td>*Standard investigations check blood gases and O₂ saturations. Chest X-ray <strong>mandatory</strong> if symptoms are severe. Severe or moderate allergy suspected measure IgA level. If severe allergy/anaphylaxis, measure mast cells tryptase (immediately post reaction, at 3 hours and then again at 24 hours.</td>
</tr>
<tr>
<td>Hypotension (isolated fall systolic of ≥30mm resulting in level &lt; 80mm)</td>
<td>Investigate as for fever. If allergy suspected measure IgA level. If severe allergy/anaphylaxis measure mast cells, as above.</td>
</tr>
</tbody>
</table>

**Standard Investigations for possible acute transfusion reactions:**
- Full blood count (FBC), renal and liver function tests, and assessment of urine for haptoglobin.
- Take samples for repeat compatibility testing & DAT (direct antiglobulin test)

**Abbreviations**
- **BTL**, Blood Transfusion Laboratory
- **Ig**, immunoglobulin
- **LDH**, lactate dehydrogenase
- **DAT** (direct antiglobulin test)

*For further information refer to section 18 in the main BT policy*
**Adult patients refusing a blood transfusion in an Emergency/elective cases**

**Life threatening Haemorrhage in an Adult Patient**

Is the patient?

**Conscious**

- A full explanation for the need of the blood component and the consequences of not receiving a transfusion must be explained by two doctors of Specialist Registrar and above qualification and if possible, in the presence of the next of kin/legal representative)

**Accepts** the blood transfusion

- Transfuse

**Refuses** the blood transfusion

- Consider use of alternatives

**Unconscious**

- Patient must have a signed and witnessed advance directive card absolutely refusing blood and releasing clinicians from any liability arising from the refusal

**Found on patient or obtained from relatives/GP**

- No evidence that patient has changed their view

- Consider use of alternatives

**Not readily available**

- If no alternatives available and withholding of treatment would affect the outcome

- Transfuse the patient

- Document everything carefully in the patient notes, dated, timed and signed

For elective patients follow the ‘conscious’ patient pathway

*For further information refer to Appendix C in the main BT policy*
Indications for the use of Irradiated and CMV negative cellular components

Requesting special products and supply:

- The requesting clinician is responsible for indicating when irradiated red cells or platelets are required.
- The BTL will ensure the issue of appropriate components dependent on availability.

Indications for the use of irradiated components:

- Patients receiving red cells that ≤ 5 days from the date of collection
- Allogeneic bone marrow/peripheral blood stem cell transplantation (See next page)
- Blood transfused to bone marrow DONORS prior to or during harvesting.
- Autologous bone marrow/peripheral blood stem cell recipients. (See next page)
- All patients treated with purine analogue drugs (discuss with Pharmacy)
- Recipients of HLA-matched platelets/components, even if patient is immunocompetent
- All granulocyte components
- Patients receiving immunosuppressive therapy with anti-thymocyte globulin (ATG), newer purine analogues e.g. *Bendamustine* and *Clorfarabine*.
- Patients receiving the biological immunosuppressive agent *Alemtuzumab* (anti-CD52) but not *Rituximab* (anti-CD20)
- Patients with aplastic anaemia receiving immunosuppressive therapy with ATG
- Some bone marrow and peripheral stem cell transplant patients.
- All patients with Hodgkin’s disease: during and after treatment & thereafter.
- All patients with hairy-cell leukaemia
- Most congenital immunodeficiency disorders.

CMV sero negative components:

CMV sero-negative cellular blood products **MUST** be given to the following immunosuppressed or immunocompromised patients:

- Patients with congenital immunodeficiencies
- Patients who are CMV sero-negative who may require, or have received, haemopoietic stem cell transplantation. If a patient’s CMV status is unknown, they should be considered as CMV sero-negative until proven otherwise.
- Any patient with aplastic anaemia or unexplained pancytopenia
- Pregnant women
- HIV positive patients
- Patients imminently about to receive stem cell transplantation.

*For further information refer to section 9 in the main BT policy and Appendix D in the main BT policy*
20 Incident reporting & risk management

All incidents are reported and managed locally as per the Trust Incident reporting and Management policy. Within the Pathology department incidents are logged on Q-Pulse and then reported nationally by the Blood Transfusion Nurse Practitioner to Serious Hazards of Transfusion (SHOT) and to the Medicines and Healthcare products Regulatory Agency (MHRA) via Serious Adverse Blood Reactions and Events (SABRE). All incidents are monitored as outlined in the Incident reporting and management Policy to ensure organisational learning from these events.

Any risks identified through trend analysis or internal or external audit would be escalated and discussed within the Pathology Department/ Hospital Transfusion Committee and where appropriate risks would be added to the relevant risk register.

21 Implementation

The Policy will be implemented via uploading to Staffnet and via Care Groups ensuring that relevant staff are made aware of the revised Policy through their local governance mechanisms.

22 Process for Monitoring Compliance/Effectiveness

The effectiveness of the entire Transfusion Process will be monitored using a local audit programme determined by the Hospital Transfusion Team and Committee and will cover key areas such as traceability (Vein to vein), sample requests, Cross-match to transfusion ratio, prescription and ordering, usage and unnecessary wastage etc.

In order to benchmark against national safe and appropriated practice the Hospital Transfusion Team will participate in National Comparative audits and Regional Audits

Any identified areas of non-adherence or gaps in assurance arising from the monitoring of this policy will result in recommendations and proposals for change to address areas of non compliance and/or embed learning. Monitoring of these plans will be coordinated by the group/committee identified in the monitoring table.
23 Arrangements for review of the policy

This policy will be reviewed and updated every three years, as clinically needed or when further evidence of consensus suggests revision is required.

24 References


8. Guidelines for Pre Transfusion Compatibility Procedures in Blood Transfusion Laboratories. BCSH. 2012


25 Appendices

Appendix A EQIA
Appendix B Operational Flowchart for downloading
Appendix C Management of patients refusing a Blood Transfusion
Appendix D Indications for the use of blood components
Appendix E BloodTrack Contingency Plan for clinical areas