Blood Transfusion Policy

Policy No: CP 2a

This policy can only be considered valid when viewed via the NBT intranet Document Management System (DMS).

If this policy is printed onto paper or saved to another location, you must check that the version number on your copy matches the one online on DMS.

Specific staff groups to whom this policy directly applies	**Likely frequency of use**	**Other staff who may need to be familiar with policy**
* All clinical staff involved in any aspect of blood transfusion practice * Portering staff who transport and collect blood components * Clerical staff who collect blood	Dependent upon role and clinical area	* Biomedical Scientists * Medical Laboratory Assistants * Clinical / Risk Managers

Owner:	Dr Karen Mead
Consultation Route:	Trust Transfusion Team Trust Transfusion Committee Clinical Effectiveness Committee
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Blood Transfusion Policy

Document Status: **Approved**

Version	Approval Date	Comments / Summary of Main Changes
1	June 2000	First version of policy as NBT
2	October 2005	Addition of requirements laid out in 'Blood Safety and Quality Regulations 2005' specifically relating to cold chain and traceability requirements.
3	July 2008	Addition of National Patient Safety Agency requirements outlined in 'Right Patient, Right Blood' including: • Sample declaration on request • New pre-collection procedure • New cold chain documentation requirements • New bedside checking procedure
4	April 2010	1) Update of procedure in line with updated BCSH guidelines for administration of blood components 2) Update of training requirement from annual to biennial 3) requirement for both staff to carry out bedside checking procedure independently
5	March 2013	1) Update on consent procedure in line with SaBTO recommendations 2) Requirement for two ID bands for inpatients 3) Amendment for maximum time allowed between removal from controlled cold storage to end of transfusion.
6	August 2014	1) New portering process following opening of Brunel building 2) Requirement for two independent samples prior to issue of group specific blood 3) Addition of key action points from BSH guidelines 4) Revised sample requirements for recently transfused patients
7	August 2015	1) Updated time requirement for return of evidence for traceability 2) Single person bedside check permitted in NBT theatre areas only 3) Use of blood boxes on the Southmead site limited to 2 hours – external locations are still permitted 5 hours maximum 4) Student midwives authorised to take blood samples for transfusion
8	August 2017	1) Agency staff excluded from carrying out assessed areas of practice 2) Updated contact numbers for pathology 3) Updated consent process for patient who lack mental capacity 4) Update on patient ID required for unknown patients 5) Suitable trained and assessed Band 2 HCAs able to monitor patient and take transfusion observations

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2. Executive Summary

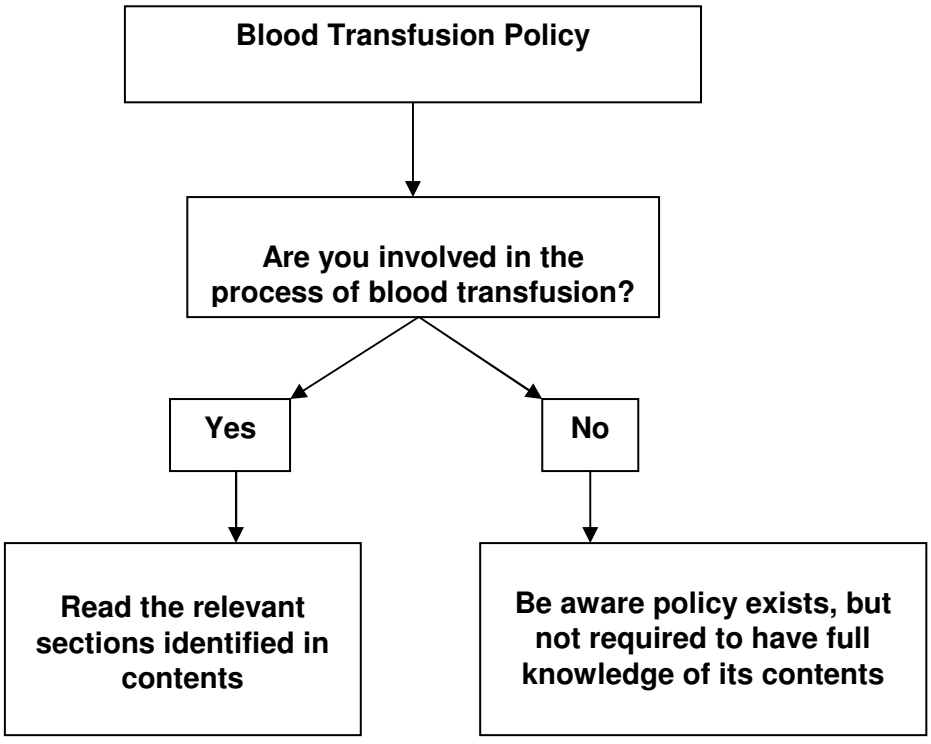
Errors in the requesting, collection and administration of blood components lead to significant risks for patients. Since its launch in 1996, the Serious Hazards of Transfusion (SHOT) scheme has continually shown that 'wrong blood to patient' episodes are a frequently reported transfusion hazard. These wrong blood incidents are mainly due to human error leading to misidentification of the patient during blood sampling, blood component collection / delivery or administration, and can lead to life-threatening haemolytic transfusion reactions and other significant morbidity.

This policy aims to ensure procedures for prescription, requesting, sampling, collection and administration of blood and the management of transfused patients comply with national guidelines and best practice.

3. Summary of Key Policy Points

- This policy applies to all personnel who are involved in the blood transfusion process
- All staff undertaking any aspect of blood transfusion should be appropriately trained and competency assessed
- Valid consent must be obtained and documented pre-transfusion where possible
- Patient must be positively identified
- An ABO incompatible blood transfusion is a "Never Event"
- All blood transfusion related adverse events and reactions must be reported to the Transfusion Laboratory as soon as possible
- Traceability of all blood components is required by law with 100% compliance

4. Flowchart Guide for the Use of This Policy



5. Purpose and Scope

The Blood Safety and Quality Regulations 2005 (BSQR)

The BSQR became UK law in November 2005. The key areas of impact for clinical staff are: education and training, traceability and haemovigilance.

- Education and Training - All staff involved in the transfusion process must be familiar with this Trust Policy and Ward Managers / Department Heads must ensure implementation of the policy. All staff members must ensure they receive training and demonstrate competence as per the Trust's Training Needs Analysis (TNA). The TNA can be viewed via the Trust Intranet on the Learning and Development (L&D) webpage under the Mandatory Training tab. Completion of training and competency assessment will be monitored and managed in accordance with the Trust's Induction and Mandatory Training Policy. Further details can be found in the Trust's Training Prospectus, also available on the L&D webpage. This policy should be read in conjunction with the Induction, Mandatory and Statutory Training policy, and the User Guide on Trust Induction, Mandatory and Statutory Training.

- Traceability - All blood components must be fully traceable from donor to patient 'vein to vein'. Clinical staff who administer blood components have responsibility for achieving 100% traceability. To achieve compliance, the sticker from the compatibility label must be fully completed and returned to the Transfusion Laboratory at the end of the transfusion episode. The maximum time allowed for return of evidence is 48 hours post-transfusion. Ward Managers will be held responsible for the investigation of non-compliances for traceability. All transfusion episodes must be fully documented on the Blood Transfusion Record in patient notes.

- Haemovigilance - All near-miss events or actual transfusion incidents at any stage of the process must be reported to the Transfusion Laboratory as soon as possible. This will enable investigation and appropriate actions to be taken to prevent re-occurrence and allow reporting to the 'Serious Adverse Blood Reactions and Events' (SABRE) scheme as required by the Department of Health and laid down in UK law.

6. Roles and Responsibilities

- All personnel who perform any part of the blood transfusion process are accountable for their practice and must ensure they maintain their training and competency. If they do not undertake this process for an extended period of time and it remains a requirement of their role, they are required to update their training and competence appropriately.

- It is the responsibility of the Ward/Clinical Manager to ensure that all relevant staff are up to date with training plus competency assessment and are aware of this Policy.

- Agency staff are not able to participate in the aspects of blood transfusion practice which are competency assessed (taking samples for transfusion investigations, collecting, checking or administering transfusion). However, they are able to care for / observe the patient and check rate of transfusion once the blood is running.

- It is the responsibility of the NBT staff member administering the transfusion to ensure subsequent monitoring responsibilities are clearly delegated to any agency staff looking after the patient.

- NBT Extra bank staff have access to the NBT training and assessment framework and providing they are up to date, they are able to carry out all transfusion related checks and duties.

7. Related North Bristol NHS Trust Policies, Protocols and Guidelines:

For all North Bristol Trust Policies and Departmental Guidelines relating to blood transfusion, please visit the North Bristol Trust website.

- Bristol Blood / Blood Component Transfusion Guideline
- Clinical Indications for Prothrombin Complex Concentrate
- Plan for the Management of Red Cells During Times of Shortages
- Plan for the Management of Platelets During Times of Shortages
- Management of Major Haemorrhage in Adults
- Management of Major Haemorrhage in Neonates
- Investigation and Management of Anaemia on Medical Wards
- Maximum Surgical Blood Ordering Schedule (MSBOS)
- Policy for the Treatment of Jehovah's Witnesses (CG50)
- Consent Policy for Examination and Treatment (CG07)
- Mental Capacity Act 2005 and Deprivation of Liberty Safeguards Policy (Cp7j)
- Patient Identification Policy (CP7g)
- Request Form and Sample Labelling Policy (CG45)
- North Bristol Infection Control Policies (IC05 and IC06)
- Peripheral Venous Cannulation Policy (IC35)
- Induction, Mandatory and Statutory Training Policy
- User Guide on Induction, Mandatory and Statutory Training

Important Contact Information:

Blood Transfusion Laboratory: Extension 48350
Monday - Sunday: 08.00hrs – 22.00hrs
At all other times bleep the on-call Haematology BMS on 9433.

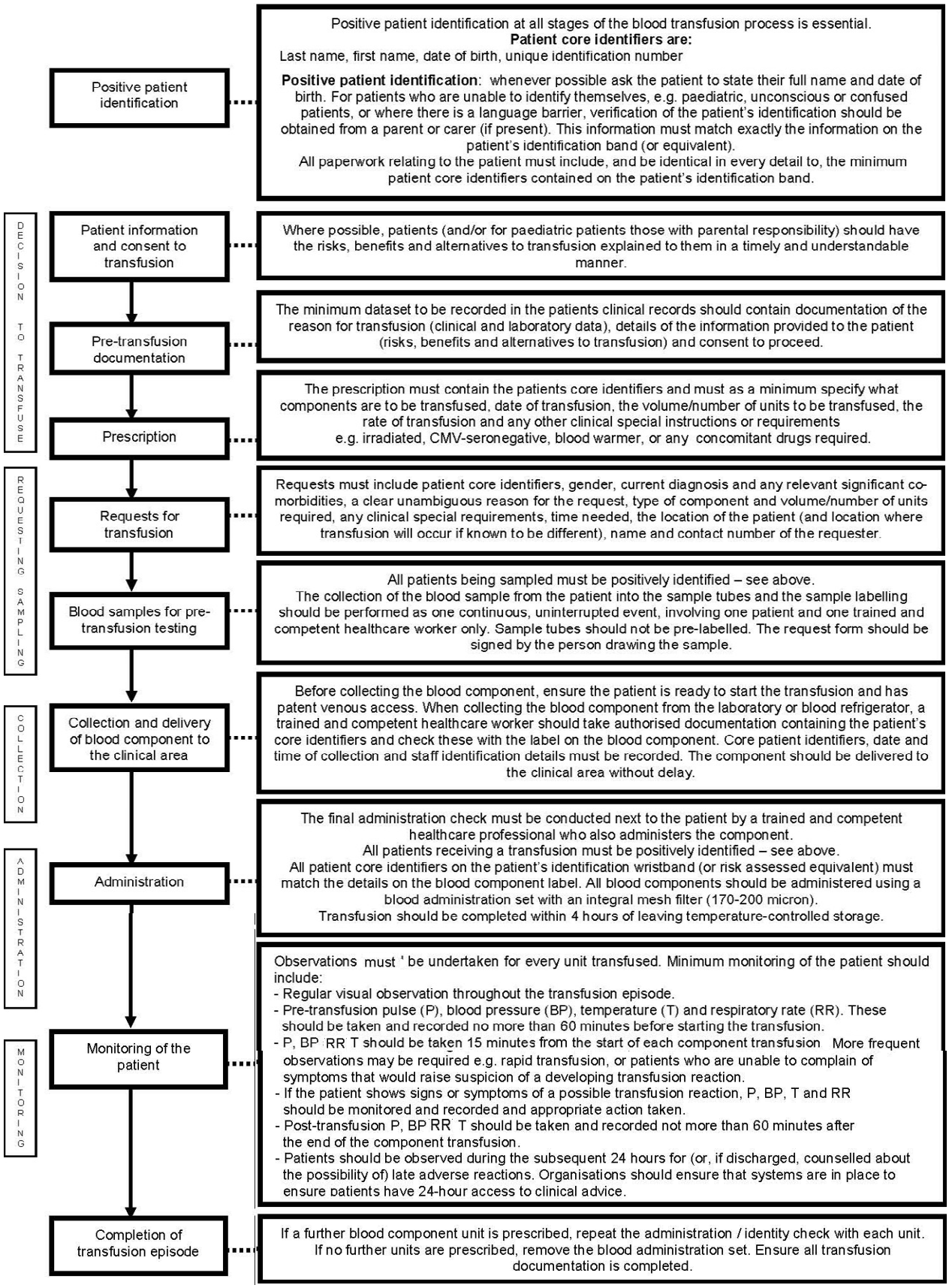
Blood Transfusion Laboratory Manager: Extension 48363
Based in the Pathology Sciences Building

Specialist Practitioner of Transfusion: Extension 48358, Mobile: 0771 857 5469
Based in the Pathology Sciences Building

Blood Conservation Coordinator: Mobile: 0780 272 0695
Based in the Brunel Building

8. Key Action Point Summary

The core policy is covered in sections 9 to 21. Key policy action points are below:



9. Patient Information and Consent

N.B. Appendices 1 and 2 contain guidance from the Advisory Committee on the Safety of Blood, Tissues and Organs (SaBTO) to support clinical staff with valid consent for transfusion.

9.1 The doctor prescribing the blood component(s) is routinely responsible for obtaining and documenting valid consent (with the exception of specialist non-medical registered practitioners who have been approved by the TTC and completed appropriate training).

9.2 Whenever possible, patients should be informed in a timely manner of the indication for a blood transfusion, the potential risks and benefits involved, in addition to the right to refuse to receive it. For further information regarding Jehovah's Witnesses and blood transfusion, please refer to the 'Treatment of Jehovah's Witnesses' policy (CG50).

9.3 The patient should be provided with information about alternatives to blood transfusion, including autologous transfusion where appropriate.

9.4 An information leaflet entitled '**Will I need a blood transfusion**' should be given to every patient, (where possible) who may require red blood cells, and is available in a variety of different languages. Other patient information leaflets are available and should be given to the appropriate patients as listed below:

- **Will I need a platelet transfusion?** – to be given to every patient who may require a platelet transfusion
- **Fresh frozen plasma (FFP) and cryoprecipitate** – to be given to every patient who may require a FFP or cryoprecipitate transfusion
- **Will my child need a plasma transfusion?** – information for parents of babies and children under the age of 16 who may need fresh frozen plasma
- **Will my baby need a blood transfusion?** – information for parents of babies who may receive a blood transfusion
- **Information for Patients Needing Irradiated Blood** – to be given to every patient requiring any irradiated blood component
- **Iron in your Diet** – to be given as appropriate in pre-op assessment clinics
- **What is Anaemia?** – to be given to patients who may have anaemia
- **Information for patients who have received an unexpected blood transfusion** – to be given to any patient who did not provide consent for transfusion prior to administration or may not be aware they received a transfusion
- **Advice Following a Blood Transfusion** – information for patients who are transfused and discharged on the same day

Please see the back of the leaflet or contact the Blood Transfusion Laboratory / Specialist Practitioner of Transfusion for more information and ordering details.

9.5 Obtaining valid consent for blood transfusion is a legal requirement. The Blood Transfusion Record (appendix 3, section 3) should be used to document that an information leaflet has been provided and the patient has given verbal consent for transfusion. If the patient refuses to or is unable to provide valid consent, this should also be documented on the Blood Transfusion Record and communicated to all relevant healthcare professionals. A summary of any information provided and discussion regarding blood transfusion should be documented in the patient notes. Guidance from SaBTO for clinical staff to support valid consent for transfusion is available in appendix 2 and 3.

9.6 For patients who have ongoing transfusion requirements, a continued consent form (RVJ1079 97948) may be used. This form must be signed by the healthcare professional obtaining consent and also by the patient. The form is valid for up to one year but consent may be withdrawn by the patient at any time during the year.

9.7 If a patient lacks mental capacity to consent then a mental capacity assessment should be recorded. A best interest determination must be carried out and where a patient lacks capacity to consent to the blood transfusion or if it is an urgent or emergency situation, treatment can be provided on the basis of 'best interests'. However, in elective situations the health care professional seeking valid consent to treatment must consider whether the patient has put in place either a valid and applicable Advance Decision to Refuse Medical Treatment, or there is a registered Lasting Power of Attorney for Health and Welfare who may make the best interest decision. Please refer to the Trust Consent Policy (CG07) and the Mental Capacity Act 2005 and Deprivation of Liberty Safeguards Policy (Cp7j) for further information. Guidance is also available in the Code of Practice which accompanies the Mental Capacity Act 2005 at www.publicguardian.gov.uk. Advice can be sought from either the Trust Solicitor or the Adult Safeguarding Team.

9.8 Where transfusion of all or specific blood components is refused, or an Advance Decision to Refuse Medical Treatment exists, this should be clearly documented in the patient's clinical notes and communicated to all relevant healthcare professionals.

9.9 Prior to or at discharge, patients who have received a blood transfusion and who were not able to give valid consent prior to the transfusion, or may not be aware they have received a transfusion, must be informed and provided with the information leaflet '**Information for patients who have received an unexpected blood transfusion**' retrospectively. A retrospective information flowchart is available in appendix 4.

10. Prescribing Blood Components

The prescription of blood components is the written authorisation to administer a blood component and is different to the request (see section 11).

10.1 The decision to transfuse must be based on a thorough clinical assessment of the patient and their individual needs. Justification for the decision to transfuse must be documented on the Blood Transfusion Record under the 'Indication for Transfusion' section (see appendix 3), and relevant pre-transfusion indices should be recorded under section 2 of the Blood Transfusion Record.

10.2 The transfusion of blood and blood components must be authorised and prescribed by the doctor making the decision to transfuse (or specialist nurse who has been approved by the TTC and completed training and competency assessment specifically for this task). Prescription must be documented on the Blood Transfusion Record (Appendix 3 – section 4) or Anaesthetic Record Chart.

10.3 The Blood Transfusion Record (or Anaesthetic Record Chart) must be clearly labelled with the patient's identification, which must include as a minimum: surname, first name, date of birth and patient identification number.

10.4 Prescription must specify product and amount required, date (and time if appropriate) for infusion, special requirements or instructions, rate of administration, identity and signature of prescriber with date and time of prescription. N.B. A unit of red blood cells and a therapeutic dose of FFP should be transfused within 4 hours from collection and a unit of platelets within an hour.

11. Requesting Blood Investigations and Components

The 'request' constitutes the mechanism of communication with the transfusion laboratory, asking them to prepare and issue the component for administration and is different to the prescription (section 10).

11.1 The request must be completed by a Doctor or Nurse / Midwife who has been approved by their Directorate to carry out this extended duty. Nursing and Midwifery staff with delegated responsibility must follow the appropriate protocol and complete the necessary training and competency assessment.

11.2 The details on the blood component request form and the sample tube are the only direct contact between the clinical area and the blood transfusion laboratory. The accuracy and completeness of this information is therefore of vital importance.

The request **must** be legible, completed prior to taking a blood sample and include the following information:

- Patient core identifiers (unique identification number, full name, date of birth)
- Date and time of sample collection with name and signature of the person who took the sample
- Identity of requestor to include name, signature and bleep / contact number

N.B An addressograph sticker may be used on the request form for patient identification purposes.

The request should also include the following:

- Patient gender
- Clear unambiguous reason for request
- Current diagnosis and relevant co-morbidities
- Patient Consultant or GP
- Location of patient at time of request
- Quantity and type of blood component(s) required
- Date and time blood component(s) are required
- Required remote issue fridge location
- Indication of special requirements e.g. irradiated / CMV negative
- Past obstetric and transfusion history
- Date and time request made

N.B. It is the responsibility of the requestor to identify any special blood requirements. Failure to provide any of the above could pose a risk to patient and / or may delay blood provision.

11.3 Blood for planned surgical procedures should be requested in accordance with the North Bristol Trust Maximum Surgical Blood Ordering Schedule (MSBOS).

11.4 Discussion between the Transfusion Laboratory and clinical staff is essential during medical emergencies that may require the issue of blood components.

11.5 If patient details are unknown or pre-allocated (HEMS / major incident), this identity must not be updated until the patient is stable and in their definitive location of care (i.e. ITU / ward area), even if their identity is known prior to this. This is essential when the patient goes to theatre first. Once identity is updated to known details (the patient's actual name / DOB etc.) this record must be merged with the previous unknown / pre-allocated patient ID record and new identification bands applied to patient. Two new group and save samples with the updated ID will be required by the lab for cross-matching purposes. Please refer to the Patient Identification policy (Cp7g) for further details regarding nomenclature used for unknown patients and pre-allocated HEMS / major incident ID.
Should a surgeon want to include the patients known (if this has become available) on a consent form, this **MUST** be **in addition** to their unknown or pre-allocated identity.
An approximate age and gender of unknown / HEMS / major incident patients must be recorded on the request form.

11.6 Telephone requests for blood components should be made by a doctor or during difficult circumstances (where the doctor is providing vital treatment and they are unable to communicate directly with the laboratory) the request can be made by a delegated individual. The requestor must provide the same information as detailed above. Laboratory personnel receiving verbal requests will record name of requestor.

12. Collection of Blood Samples for Pre-Transfusion Testing

The collection of blood samples from the patient and subsequent sample labelling must be performed as one continuous, uninterrupted event at the patient's (bed)side involving one patient and one trained and competent healthcare worker only.

12.1 Blood samples for pre-transfusion compatibility testing can be taken by the following personnel, subject to blood transfusion training and competency assessment:

- Doctor
- Registered Practitioner trained in phlebotomy
- Student Midwife trained in phlebotomy
- Assistant Practitioner or Health Care Assistant trained in phlebotomy
- Phlebotomist

N.B Agency staff are excluded from carrying out this duty.

12.2 Two confirmed blood groups are required prior to the release of group specific blood components. If unsure whether a second sample is required, check with the laboratory. If a second sample is required, it should be taken by separate individuals, whenever possible, and must be taken independently of the first.

12.3 If a transfusion has occurred within the last three months, the sample will be valid for 72 hours. For all other patients, the sample will be valid for 5 days.

12.4 The patient must be provided with an explanation of the sampling procedure and valid consent for the sample must be obtained (where possible) before the patient is bled.

12.5 Patient identification

At the time of taking samples for blood transfusion the patient must be positively identified.

i) All patients that are admitted to the Trust and all patients unable to identify themselves MUST have two identification bands (please see the Patient Identification Policy CP7g for further information). Each band should contain the following information:

- Full name of patient
- Unique patient identification number (to match that provided on the request form)
- Date of birth

N.B. The only patient identification numbers that are acceptable for blood transfusion purposes are MRN or NHS numbers. ICE numbers are not acceptable in any situation.

ii) Whenever possible, ask the patient to state their full name and date of birth. For patients unable to identify themselves, verification of patient identification should be obtained from a parent or carer if present.

iii) Check details on patient's identification band match patient / carer's verbal identification and the details on the request.

iv) If there are any patient identification discrepancies, the information must be verified and the discrepancies investigated and corrected before proceeding with taking the blood sample.

12.6 Sample labelling

i) A sample tube containing EDTA is required for blood transfusion investigations. In normal circumstances this should be a 6ml tube for adults or a 1ml tube for babies.

ii) Samples must be:

- taken from one patient at a time
- legibly hand labelled immediately after sampling with the patient core identifiers:

- Patient identification number
- Patient surname
- Patient first name
- Date of birth

- labelled at the bedside with direct reference to the patient – identification band where present or verbal response if no identification band present
- the patient core identifiers must match exactly the request form and identification band (where present)
- taken and fully labelled by the same member of staff - signed, dated and timed by the person taking the sample to confirm that the patient details have been checked and are correct

iii) Sample tubes must not be pre-labelled

iv) Addressograph labels must not be used

v) Samples must not be taken from arms with a cannula or IV fluid in place

vii) The person taking the blood sample must also complete the sample collection declaration on the request form to confirm the sample has been taken in accordance with this policy. Date and time of sample collection must be documented in addition to the name and signature of the person who bled the patient.

viii) Blood will only be issued for adequately identified specimens and requests. The laboratory operate a zero tolerance policy and failure to comply with any of the above will result in the sample being rejected and the error being recorded and reported as appropriate.

12.7 For emergency or urgent samples, the hospital transfusion laboratory staff should be contacted to alert them to the imminent receipt of the sample.

12.8 Samples should be transported to the blood transfusion laboratory in a timely manner either using the pneumatic air tube system or via porters.

13. Pre-Collection Procedure

All patients requiring blood transfusion must be wearing two patient identification bands.

13.1 The collection of blood components can be requested by the following personnel, subject to training and competency assessment:

- Doctor
- Registered Practitioner

N.B Agency staff are excluded from carrying out this duty

13.2 Before requesting the collection of blood components, the following procedures / checks should be carried out:

- check patient has an identification band
- check details on prescription
- check verbal consent has been obtained (where appropriate) and documented
- check the patient is ready and has patent venous access
- ensure all required equipment / items have been collected
- confirm blood components are ready for collection
- ensure pre-transfusion baseline observations (temperature, pulse, blood pressure and respiratory rate) have been recorded
- confirm suitably trained and competent staff are available for duration of transfusion

N.B. Pre-transfusion observations can be taken up to an hour prior to transfusion. If any observations are outside of an acceptable range for that patient then medical advice should be sought before blood unit(s) collected.

13.3 Check and confirm patient identification (first name, surname, date of birth and unique identification number) from the following:

- Verbal identification from the patient where possible (full name and date of birth only)
- Patient identification band
- Blood Transfusion Record

13.4 For red blood cells, identify an appropriately trained person to collect the blood units from the required remote issue fridge. For other blood components or products, the Facilities Management (FM) helpdesk should be contacted on extension 5555 to request portering. For urgent blood collections from Pathology Sciences, phone the blood transfusion laboratory directly to organise portering. For emergency situations, refer to the appropriate major haemorrhage guideline.

13.5 Once the above checks have been completed, the person requesting the collection of blood component(s) must sign and record the date and time collection was requested on the Blood Transfusion Record (appendix 3, section 5). This documentation should be taken by the collector and used to confirm patient identification at the remote issue fridge / Blood Transfusion Laboratory.

14. Collection of Blood Components for Transfusion

Removal of blood components from their storage location continues to be identified as a major source of error in the transfusion process (SHOT data). Many collection errors occur when the patient details on the laboratory produced compatibility label attached to the blood component pack are not checked against the patient's identification details brought from the clinical area.

14.1 Clinical staff are responsible for collecting red blood cells from the remote issue fridge. The porters will collect any urgent / emergency red cells and all other blood components and products from the Blood Transfusion Laboratory.

14.2 Anyone collecting blood for a patient must be instructed in the correct procedure as outlined below, and must ensure the Blood Transfusion Record contains patient identification number, full name and date of birth.

The following grades have been identified as appropriate, subject to training and competency assessment:

- Registered Practitioner (or student)
- Assistant Practitioner (or trainee)
- Health Care Assistant (HCA)
- Ward Clerk
- Theatre Porters
- General Porters (from the blood transfusion laboratory only)
  N.B Agency staff are excluded from carrying out this duty

The person responsible for collecting the blood for a patient (the collector) must bring the Blood Transfusion Record containing patient identification to the remote issue fridge or Blood Transfusion Laboratory in non-emergency situations.

14.3 For red blood cell collection from the issue fridge complete the following steps: -

i. Before opening the fridge, check the details on the blood bank register (arranged alphabetically by surname) match the details on the patient's Blood Transfusion Record:
   - Patient identification number
   - Patient surname and first name
   - Date of birth

ii. Open the fridge and select the required unit from the appropriate shelf (as documented on the blood bank register). The compatibility report form for each patient will be attached to the first unit for transfusion. Check expiry date and take units in expiry date order i.e. from the front of the patient allocation, not from the back. N.B the expiry date refers to the unit expiring at midnight of that date.

iii. Only one unit of blood should be removed at a time unless there is a clinical need for rapid transfusion of more than one unit. In these cases, the clinical situation must be discussed with the Blood Transfusion Laboratory.

iv. Ensure the fridge door is properly closed before carrying out the remaining checks.

v Check that all of the patient identification details on the compatibility label match the corresponding details on the blood bank register and on the patient's Blood Transfusion Record:
   - Patient identification number
   - Patient surname and first name
   - Date of birth

vi. Check the bag donation number on the front of the blood unit matches that on the compatibility label attached to the blood unit and on the blood bank register. Visually inspect the unit for leaks, clots and discolouration.

vii If all the details are correct, sign the blood bank register and record date and time of removal from issue fridge against the appropriate bag donation number. If any discrepancies are found during any of the above checks, return the unit to the fridge and contact the Blood Transfusion Laboratory for assistance.

NB. Emergency blood group O red cells are available from the top shelf of remote issue fridges in CDS and Brunel level 0, 2, and 3. Upon collection, complete steps vi and vii above but also record patient identification on the blood bank register. The Blood Transfusion Laboratory must be notified as soon as these units are removed to enable replacement emergency units to be issued.

viii. Place the unit of red cells into a Blood Transit Bag to conceal it from hospital visitors. Return to the ward / department as soon as possible with the red cells, compatibility report form (with the first unit of blood only) and the patient's Blood Transfusion Record.

ix The red cells must be delivered to the member of staff responsible for the patient's transfusion.

x The collector and person receiving the blood component / product (the receiver) must both ensure the patient identification details (surname, first name, DOB, patient identification number) are identical on the following:

   - the compatibility label on the blood unit
   - the compatibility report form sent with the first unit from the blood bank
   - the Blood Transfusion Record (containing prescription)

xi The receiver must document receipt of the unit on the Blood Transfusion Record to include signature, date and time received and then start the transfusion within 30 minutes from the time of removal from the issue fridge.

xii If a red cell unit is to be returned to the issue fridge (this must occur within 30 minutes from removal – see section 16.14 for further information) place the unit in the position it was collected from. Sign the blood bank register and record date and time of return against the appropriate bag donation number on the blood bank register.

14.4 If red cells or other blood components are to be transported off site, the Blood Transfusion Laboratory staff must be informed beforehand to ensure that the blood is packaged appropriately, and to ensure traceability of each unit. The Blood Transfusion Laboratory staff will contact the receiving location to inform them of the pending arrival of blood components and to provide details of the units in transport.

14.5 If red cells or other blood components are received from another (external) location during patient transfer, the Blood Transfusion Laboratory staff must be informed immediately of unit details for traceability purposes. Whenever possible, the units should be taken immediately to the Blood Transfusion Laboratory to be 'booked' into the Trust prior to transfusion.

14.6 If red cells or other blood components have been transfused to a patient during transfer, the details of these units must be given to the Blood Transfusion Laboratory staff as soon as possible for traceability purposes. Wherever possible, paperwork from the sending laboratory should be photocopied and sent to NBT Blood Transfusion Laboratory.

14.7 The fate of all blood component units originating from other locations must be recorded on the ward blood transfusion register – by hand if necessary. Any unused units should be returned to the Blood Transfusion Laboratory as normal.

14.8 Platelets, FFP, cryoprecipitate and blood products should be collected from the blood transfusion laboratory by a porter. The porter will first attend the clinical area to collect the Blood Transfusion Record whenever time allows (see section 13.5). The porter will return to the ward / department as soon as possible with the blood component(s) / product(s), Compatibility Report Form and the patient's Blood Transfusion Record.

14.9 The receiver must document receipt on the Blood Transfusion Record to include signature, date and time received and then start the transfusion as soon as possible.

15. Preparing for Transfusion

Failure to correctly undertake the formal identity check of the blood component with the patient prior to administration puts patients at risk of receiving the wrong blood.

N.B Upon arrival in the clinical area, the blood unit must be checked and receipt documented as detailed in section 14.2x / 14.2xi, then transfusion started or unit returned to the Blood Bank within 30 minutes of removal – see section 16.14 / 16.15 for further information.

15.1 Before a unit of blood is transfused the following checks and steps must be taken independently by two personnel suitably trained and competency assessed in the administration of blood and blood components:

- Doctor
- Registered Practitioner
- Assistant Practitioners (second checking only, NOT administration)
- **in theatres only** one suitably trained and assessed Anaesthetist is acceptable.

N.B Agency staff are excluded from carrying out this duty

The pre-transfusion checklist on the reverse of the Blood Transfusion Record should be completed to ensure all checks have been carried out. During the checking process, it is vital that staff are not distracted or interrupted.

Before starting the transfusion:

i. Check the Blood Transfusion Record to ensure the blood was correctly prescribed, the correct component has been collected, a reason for transfusion was documented, and patient consent has been obtained. Also check for any special blood / transfusion requirements. Ensure pre-transfusion observations are documented and patient advised of potential side effects (see section 17.7).

ii. Ensure the ABO, Rh D group and blood bag donation number is identical on the following:
   - blood unit
   - compatibility label
   - compatibility report form (sent with the blood from the Blood Bank)

   NB. Occasionally blood of a different group will be issued for a patient but this will be stated on the compatibility report form.

iii. Check the details on the unit and compatibility report form match any requirements on prescription for special types of blood, e.g. irradiated, Hepatitis E negative.

iv. Ensure the unit of blood is currently within expiry date and that there is no evidence of leaks, discoloration, clots or damage. N.B the expiry date refers to the unit expiring at midnight of that date unless a specific expiry time is stated.

At the bedside:
N.B The compatibility report form and patient clinical records must not form part of the final bedside patient identification check.

v. Patients who can communicate must be asked to state their surname, first name and date of birth. For patients unable to identify themselves, verification should be obtained from a parent or carer if present.

vi. Confirm the details provided by the patient plus the patient identification number are the same on the patient identification band and on the compatibility label attached to the blood unit.

vii If there are any discrepancies in any of the identification steps, the units must be returned to the issue fridge / Blood Transfusion Laboratory immediately and the laboratory staff contacted for assistance.

viii If blood components are transferred with a patient from / to another hospital or were transfused on route, the Blood Transfusion Department must be notified immediately (please see section 14.3-14.6).

15.2 All patients receiving a transfusion must be positively identified and have two patient identification bands. It is the responsibility of the person administering the blood to ensure an identity band is attached to the patient. No identity band, no transfusion.

15.3 The patient should be in a clinical area where resuscitation facilities are available and where there are enough staff available to monitor and observe the patient.

15.5 Electronic infusion pumps must not be used for the administration of red cells unless they have been validated for transfusion. If an infusion pump is used, the corresponding administration sets recommended by the manufacturer must be used.

16. Administering the Transfusion

16.1 Once the transfusion has started, the compatibility report form must be signed by both staff members completing the identification checks. Details of the transfusion date, start time and completion time must be recorded on the compatibility report form for each unit transfused.

N.B. The transfusion of all blood components should be completed within 4 hours of removal from a controlled temperature environment.

16.2 The unit volume (mls) and start time should be recorded on the IV fluid balance chart in the appropriate place.

16.3 The peelable section of the compatibility label must be signed by both staff members completing the identification checks, and the date and time transfusion commenced recorded.

16.4 The peelable section must be removed from the compatibility label and affixed to the Ward Blood Transfusion Register. The unit must be recorded as transfused on this register.

16.5 If the unit is discarded before administration, the peelable section of the compatibility label must be signed with date and time recorded, then affixed to the ward blood transfusion register but marked as wasted. N.B. if some but not the entire unit has been administered, the unit must be recorded as transfused in the ward blood transfusion register.

16.6 If the unit is returned unused to the blood bank, the sticker should not be removed from the compatibility label.

16.7 The ward blood transfusion register sheets must be returned to the Blood Transfusion Laboratory within a maximum of 48 hours from when blood components have been administered.

16.8 A photocopy of the original must be retained in the Ward Blood Transfusion Folder for a minimum of three months.

16.9 All blood components must be transfused through the appropriate sterile giving set containing a filter. The only exception will be for premature or very low birth-weight babies on Neonatal Intensive Care Unit where only very small volumes are being infused using an appropriate sterile syringe system.

16.10 The cannula size should be appropriate for the size of vein and the rate of transfusion (please refer to appendix 5 and the Peripheral Cannulation Policy (IC35 located within Infection Control for further details).

16.11 Blood must only be warmed using a specifically designed blood-warming device with suitable monitoring (appendix 5). Warming of blood is usually only necessary in small children, in rapid / large volume transfusions or in patients with cold autoimmune haemolysis.

16.12 Nothing must be added to blood bags under any circumstances.

16.13 Each giving set must not be used for longer than 12 hours.

16.14 Red Blood Cells must not be out of the fridge for more than 30 minutes before the transfusion commences.

If red cells have been out of the fridge for more than 30 minutes but transfusion is imminent, please discuss duration of transfusion with Haematology Consultant or Registrar, Specialist Practitioner of Transfusion or Transfusion Laboratory Staff.

If red cells have been out of the fridge for more than 30 minutes and there is no prospect of imminent transfusion, they **must not** be returned to the issue fridge as it is deemed potentially dangerous to patient. Under these circumstances, units **must** be returned to the Blood Transfusion Laboratory for disposal.

The FM helpdesk should be contacted on ext 5555 to arrange return of blood components / products to the lab via portering. All blood components / products should be returned as soon as possible so that these units can be reissued if appropriate.

16.15 Red blood cells which have not been used and have been out of the fridge for less than 30 minutes must be returned to the issue fridge immediately. The date, time and identity of person returning the red cells must be recorded on the Blood Bank Register.

16.16 Red blood cells which are packed by laboratory staff into a blood transport box for use within the Trust (by arrangement only), must be transfused within two hours of packaging or returned to cold storage (documenting on the Blood Bank Register that unit(s) have been stored appropriately in a blood box in addition to date, time and identity of person returning the unit(s)). Any units remaining in the box for over two hours must be returned to the Blood Transfusion Laboratory for immediate disposal.

16.17 Blood components must never be put in ward or clinical fridges.

16.18 Platelets must remain at room temperature and should be administered using platelet specific giving sets which will be provided on collection from the Blood Transfusion Laboratory. In the event that a specific platelet giving set is not provided then a standard blood administration set can be used.

17. Blood Transfusion Observations

Observations and monitoring of the patient during a transfusion is essential if adverse transfusion reactions are to be quickly identified and managed.

17.1 Observations must be carried out and recorded during the administration of all blood components. The monitoring of a patient can be performed by the following appropriately trained grades of staff:

- Doctor
- Registered Practitioner
- Assistant Practitioner (AP)
- Student Nurse / Midwife / ODP / Trainee AP
- Band 2 or 3 Healthcare Assistant

17.2 Patients should be instructed to report promptly if they develop shivering, itching, rash, flushing, shortness of breath, pain at transfusion site, loin pain or are feeling unwell.

17.3 Vital signs (temperature, pulse respiratory rate and blood pressure) must be recorded before collection of blood unit, within 15 minutes of beginning transfusion, at appropriate intervals and at the end of each unit transfused.

17.4 Monitor the patient during the first five minutes of infusion for any initial reaction to the blood component and carry out regular visual observations throughout the transfusion episode. Deterioration in the patient's condition, or development of symptoms

suggesting a transfusion reaction should prompt more frequent observations, dictated by the clinical situation.

17.5 Observations must be recorded earlier during a rapid transfusion and more frequently in patients who are unable to complain of symptoms that would raise suspicion of a developing transfusion reaction.

17.6 All observations relating to a transfusion episode must be clearly identified and documented on routine observation charts.

17.7 In normal circumstances a unit of red blood cells can be transfused over 2 hours and must be completed within 4 hours of removal from controlled temperature storage. After this time, unless otherwise indicated, take down the unit and dispose of any remaining blood in the pack. Platelets and FFP can be infused more rapidly.

17.8 Diuretics do not need to be prescribed as routine in every case. The clinical indication should be assessed for each individual.

17.9 If an increased temperature of 1^{o}C or greater is observed above pre-transfusion levels then a transfusion reaction could be occurring – see appendix 6 and 7.

17.10 Patients should be observed for late reactions during the subsequent 24 hours post-transfusion. For transfusions administered as day case, patients should be counselled about the possibility of late adverse reactions and should be issued with an information leaflet entitled 'advice following a blood transfusion'. This leaflet identifies signs and symptoms which may be associated with a transfusion reaction and contains 24-hour contact details for clinical advice.

18. Completion of transfusion

18.1 After each unit is transfused, record end time of transfusion on the compatibility report form and ensure that the traceability sticker has been removed from the compatibility label and placed in the ward blood transfusion folder. This evidence of transfusion must be returned to the blood transfusion laboratory at the end of the transfusion episode. The maximum time allowed for return of evidence will be 48 hours post-transfusion.

18.2 The entire giving set including the spike of the IV administration set should be removed from the bag as one complete piece and disposed of into a sharps box. Giving sets should not be flushed with saline after transfusion and must not be cut with scissors to remove the spike from the set.

18.3 If the unit contains any residue, the blood bag must be sealed to prevent leaks.

18.4 Empty blood bags must be placed in a sealed plastic bag. The date and time the transfusion episode was completed should be documented on a label and attached to the bag.

18.5 Retain all blood bags on the ward or clinical area for <u>24 hours</u> from the time of completion of the transfusion episode, even if the transfusion extends over 2-3 days. Final disposal of bags must be into clinical waste.

18.6 Ensure the compatibility report form is attached to the Blood Transfusion Record and filed in the patient's notes.

18.7 Ensure the volume administered (mls) is correctly documented on the fluid balance chart.

18.8 Ensure end time and full set of observations at end of transfusion are recorded on the observation chart for every unit transfused. Patients must be closely observed during the subsequent 24 hours where possible for late adverse reactions.

18.9 An indication of whether or not the transfusion achieved the desired effect (either post transfusion increment or improvement in patient symptoms) and details of any reactions to the transfusion must be documented in the patient's clinical records.

19. What to do if a transfusion reaction is suspected

Observation and monitoring of the patient during a transfusion is essential if adverse reactions to the transfusion are to be quickly identified and managed.

19.1 If a transfusion reaction is suspected:

STOP THE TRANSFUSION IMMEDIATELY

- Perform rapid clinical assessment
- Check the details on the compatibility label match the details on the patient's identification band
- Visually assess unit
- Check and record full set of observations
- Contact the doctor immediately
- Document any symptoms / signs of a transfusion reaction in patient notes

19.2 MANAGEMENT OF A SUSPECTED TRANSFUSION REACTION

Appendix 6 contains a flow diagram which includes symptoms and signs associated with possible transfusion reactions and divides these, according to severity, into severe/life-threatening, moderate or mild with suggested management.
Appendix 7 contains a table detailing appropriate investigations for different types of reaction. N.B. Mild reactions do not require further investigation.

19.3 All suspected blood transfusion reactions (if transfusion discontinued) must be reported immediately by telephone to the Blood Transfusion Laboratory and followed up with a transfusion reaction form (appendix 8 – available from the Blood Transfusion Laboratory) to enable investigation and reporting as appropriate. The management and outcome of any transfusion reaction or adverse event must be documented in the patient notes. An eAIMS form should be completed by the clinical area.

20. Transfusion incident reporting

It is a legal requirement to investigate and report any serious adverse reaction (transfusion discontinued) or incident that occurred during any part of the transfusion process to local risk management, in addition to SHOT and the Medicines and Healthcare Products Regulatory Agency (MHRA) via the Serious Adverse Blood Reactions and Events (SABRE) system. Therefore, the Blood Transfusion Laboratory or Specialist Practitioner of Transfusion must be notified immediately of any such events, and an eAIMS form must be completed.

21. Near miss events

A near miss event is any error which if undetected, could result in the determination of a wrong blood group, or issue, collection, or administration of an incorrect, inappropriate or unsuitable component but which was recognised BEFORE transfusion took place. All near miss events must be reported to the Blood Transfusion Laboratory as soon as possible and an eAIMS form completed. These incidents will need to be reported nationally as appropriate.

22. Audit and Monitoring Compliance

Compliance with the Trust's Blood Transfusion Policy is monitored using numerous audits:

Audit Topic	Process(es) Covered	Frequency of Audit	Auditor(s)	Report to
Wrong blood in tube (WBIT) events	WBIT events whereby 1) Blood in tube does not belong to patient identified on sample label and request form. 2) Patient information on sample label contains identifiers from more than one patient OR patient identifiers on the sample label differ from those on the request form.	Ongoing	WBIT working group	TTT, TTC subgroup and TTC
Blood Transfusion Documentation / Traceability	Vertical audit retrospectively examining the documentation available for a single unit of blood from arriving in the Trust to patient issue from the lab. Examines laboratory documentation, both electronic and paper-based recording.	Quarterly	Laboratory staff	Relevant Laboratory Staff
Traceability	Recorded final fate of every blood component issued from Blood Bank	Monthly	Laboratory staff	TTT / TTC
Training	Mandatory training and competency assessment of all relevant clinical staff	Monthly	Staff Development	TTC, Trust Mandatory Steering Group
National Comparative Audit	Any aspect of safe and appropriate use of blood	Several times a year	Depends on audit requirements	TTC, relevant clinical staff

- Incident reports are used to monitor compliance with the Blood Transfusion policy
- Non-compliances identified as part of Pathology's ongoing monitoring processes are reported and monitored in accordance with the Trust's Incident Reporting Policy.
- Data and action plans derived from incidents and audits are monitored and reviewed regularly within the Blood Transfusion department, monthly at the Trust Transfusion Team (TTT) meeting, bimonthly at the Trust Transfusion Committee (TTC) subgroup meeting and quarterly at the TTC meeting.
- Any shortfalls or non-compliances identified will be fed back to the relevant clinical / laboratory leads for action
- Audit and incident findings are included as part of the training of clinical staff and will be presented at the relevant management meetings for information and action.

23. References

BCSH - The administration of blood components 2009. Available at: http://www.bcshguidelines.com

Handbook of Transfusion Medicine. Blood Transfusion Services of the United Kingdom. Fifth Edition, 2013. The Stationery Office.

National Patient Safety Agency. Safer Practice Notice 14 – Right Patient, Right Blood. (2006). Available at: http://www.nrls.npsa.nhs.uk/resources/?entryid45=59805

Office of Public Sector Information. The Blood Safety and Quality Regulations 2005. (the Stationary Office ISBN 0110516222). Available at: http://www.legislation.gov.uk/uksi/2005/50/contents/made

National Blood Transfusion Committee -
Requirements for Training and Assessment in Blood Transfusion 2016. Available at: http://transfusionguidelines.org.uk/uk-transfusion-committees/national-blood-transfusion-committee

SaBTO
Advisory Committee on the Safety of Blood, Tissues and Organs

Appendix 1

GUIDANCE FOR CLINICAL STAFF TO SUPPORT PATIENT CONSENT FOR BLOOD TRANSFUSION

Patient may require Blood / Blood Component Transfusion

Patients receiving a blood transfusion (red cells, platelets or plasma) whether for a medical or surgical cause should be informed of the indication for the transfusion including risks, benefits and alternatives. A record of this discussion should be documented in the patient's clinical records.

Ideally the decision to transfuse should be made with the patient or parent/carer in advance of any planned transfusion.

In the emergency setting, the information will need to be given retrospectively.

Prospective Information

Valid consent* should be obtained prior to any planned transfusion and documented in the patient's clinical record.

*Valid consent entails the provision of information on risks, benefits and alternatives available before asking the patient to give consent. This does not have to include a signature from the patient.

Retrospective Information

Patients treated in emergency setting where it was not possible to obtain valid consent pre-transfusion.

Patients who were told pre-procedure (e.g. pre-operatively) that they *might* require a transfusion then need to be informed whether they did/did not receive a transfusion.

Key issues to be discussed when obtaining valid consent

1. The following information should be discussed:
   - Type of blood / blood component
   - Indication for transfusion
   - Benefits of the transfusion
   - Risks of transfusion
   - Possible alternatives to transfusion
   - How the transfusion is administered and the importance of correct patient identification
   - Inform patient that following a blood transfusion they can no longer be a blood donor.
2. Provide written information.
3. Check if patient needs time to consider or requires further information.
4. Document the discussion in the patient's clinical records.

At discharge

1. If patient has had a transfusion, ensure that they have been informed.
2. Record information about the transfusion in the discharge summary, also stating that the patient has been informed.

Appendix 2

CONSENT FOR TRANSFUSION OF BLOOD COMPONENTS – SUPPORTING INFORMATION FOR HEALTHCARE PROFESSIONALS

Wherever possible, consent for transfusion should be obtained from the patient or parent/carer in advance and documented in the patient's notes. This is applicable to patients receiving not only blood (red cells), but also platelets, plasma (FFP), cryoprecipitate, and other blood components.

Issues for discussion with the patient:

a) Reason/indication[#] for transfusion, including the type and expected amount of blood components being transfused, and how the transfusion is administered;

[#]See National Blood Transfusion Committee 'Indication Codes for Transfusion – September 2016' bookmark/poster

b) Benefits expected from the transfusion (e.g. symptomatic relief of anaemia);

c) Risks of transfusion ~

Infection:
Hepatitis B*: very rare
HIV*: very rare
Hepatitis C*: very rare
vCJD: very rare
Bacterial: very rare

*See also NHS Blood and Transplant Patient Information Leaflet 'Will I need a blood transfusion?'

Other risks:
incorrect blood component transfused: very rare
acute (non-haemolytic) transfusion reaction: very rare
haemolytic transfusion reaction: very rare
TACO - transfusion associated circulatory overload: very rare
transfusion associated dyspnoea: very rare
post transfusion purpura: very rare
TRALI - transfusion associated acute lung injury: very rare
transfusion associated graft-vs-host disease: very rare

Frequency of risks are defined as: uncommon (≥1/1,000 to <1/100), rare (≥1/10,000 to <1/1,000), and very rare (≤1/10,000) { electronic Medicines Compendium (eMC) http://www.medicines.org.uk/emc/ }

d) Alternatives to transfusion: may include use of oral/intravenous iron, cell salvage;

e) Right to refuse transfusion and religious objections: if possible establish why the patient is refusing, and if there are any circumstances in which they would receive blood components;

f) The importance of correct, positive patient identification at every stage of the transfusion process (starting at pre-transfusion venous blood sample taking);

g) Patient information leaflets, including leaflet for unexpected transfusion;

h) Following transfusion of any blood component the patient can no longer be a blood donor.

Notes for healthcare professional:

- The process of seeking consent for transfusion should not impede the emergency provision of blood components;
- Consent does not have to include a signature from the patient, but this would be wholly appropriate if achieved;
- The patient should be offered time to consider their decision and read supporting information wherever possible;
- Where it was not possible to gain consent before transfusion, information should still be given to the patient afterwards; it is essential that every patient that has had a transfusion is made aware of this before they are discharged from hospital;
- Incorrect blood component transfused (IBCT) includes receiving a component intended for another patient (may or may not be ABO compatible, or the correct type of component) and special requirements not being met (such as irradiated components); IBCT will not necessarily result in harm to the patient;

Useful websites:
http://www.transfusionguidelines.org.uk/docs/pdfs/bbt_informationresource_final_.pdf
http://www.transfusionguidelines.org.uk/Index.aspx?Publication=BBT&Section=22&pageid=7691
http://hospital.blood.co.uk/library/patient_information_leaflets/leaflets/index.asp
http://www.shotuk.org/home/

Appendix 3: Blood Transfusion Record

North Bristol NHS Trust

BLOOD TRANSFUSION RECORD

It is Trust policy to complete as a minimum:

Section 1: Indication for Transfusion Section 3: Agreement to Transfusion Section 4: Prescription
Section 5: Blood Collection Record of Administration: to record date, time & staff signatures

Hospital.....	Affix patient addressograph here or complete below:
Ward/Dept.....	**Surname:** .....
Directorate.....	**First Name(s):** .....
Consultant.....	**Hospital No:** ..... **DOB** .....

1. Indication for Transfusion

An Hb threshold of **70g/l** in otherwise fit patients (80g/l in older patients and those with known / likely cardiovascular disease) is recommended unless symptomatic or active bleeding.

Transfusion to Hb above 100g/l is very rarely indicated unless patient is red cell dependent or a neonate.

Symptoms / signs .....

Diagnosis causing low Hb / anaemia / bleeding.....

2. Relevant Medical History

Pre-transfusion Haemoglobin .....g/l

Previous transfusion of blood product: Yes / No

Blood group .....

Special considerations.....

Previous reaction: Yes / No When: .....

Details of previous reaction if applicable:.....

.....

3. Agreement to Transfusion

☐ This patient has verbally agreed to transfusion of the blood component prescribed, understands the reason for this, possible alternatives and has received relevant information leaflets.

☐ This patient has not provided consent because .....
and must be informed of the transfusion prior to / at discharge.

Date ..... Staff signature..... Print name .....

4. Prescription

Sections 1, 2 and 3 should usually be completed at time of prescription. During surgery, prescription on the Anaesthetic Record is acceptable.

Product and amount	Date for infusion	Special requirements	Rate	Prescribing Doctor name, sign, date & time

5. Blood Collection (Take Blood Transfusion Record to fridge)

Requestor: check patient ID at bedside, patient ID confirmed with collector

Receiver: take receipt of blood

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Sign:	.....	.....	.....	.....	.....	.....
Date	.....	.....	.....	.....	.....	.....
Time	.....	.....	.....	.....	.....	.....
Sign:	.....	.....	.....	.....	.....	.....
Date	.....	.....	.....	.....	.....	.....
Time	.....	.....	.....	.....	.....	.....

Page 1 of 2 Blood Transfusion Record October 2013

6. Pre-transfusion Checklist *(tick each item when completed)*

☐ Documented indication for transfusion ☐ Prescription ☐ Agreed to transfusion

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
- ABO & RhD group and donation number on compatibility form / label / blood unit	☐	☐	☐	☐	☐	☐
- Patient ID on transfusion record / compatibility form and blood bag label	☐	☐	☐	☐	☐	☐
- Special requirements met	☐	☐	☐	☐	☐	☐
- Blood unit undamaged / within expiry	☐	☐	☐	☐	☐	☐
At Bedside						
- Verbal patient identification	☐	☐	☐	☐	☐	☐
- Patient identification including hosp number on wristband and unit of blood	☐	☐	☐	☐	☐	☐
- Complete traceability sticker and place in ward blood transfusion register upon transfusion	☐	☐	☐	☐	☐	☐

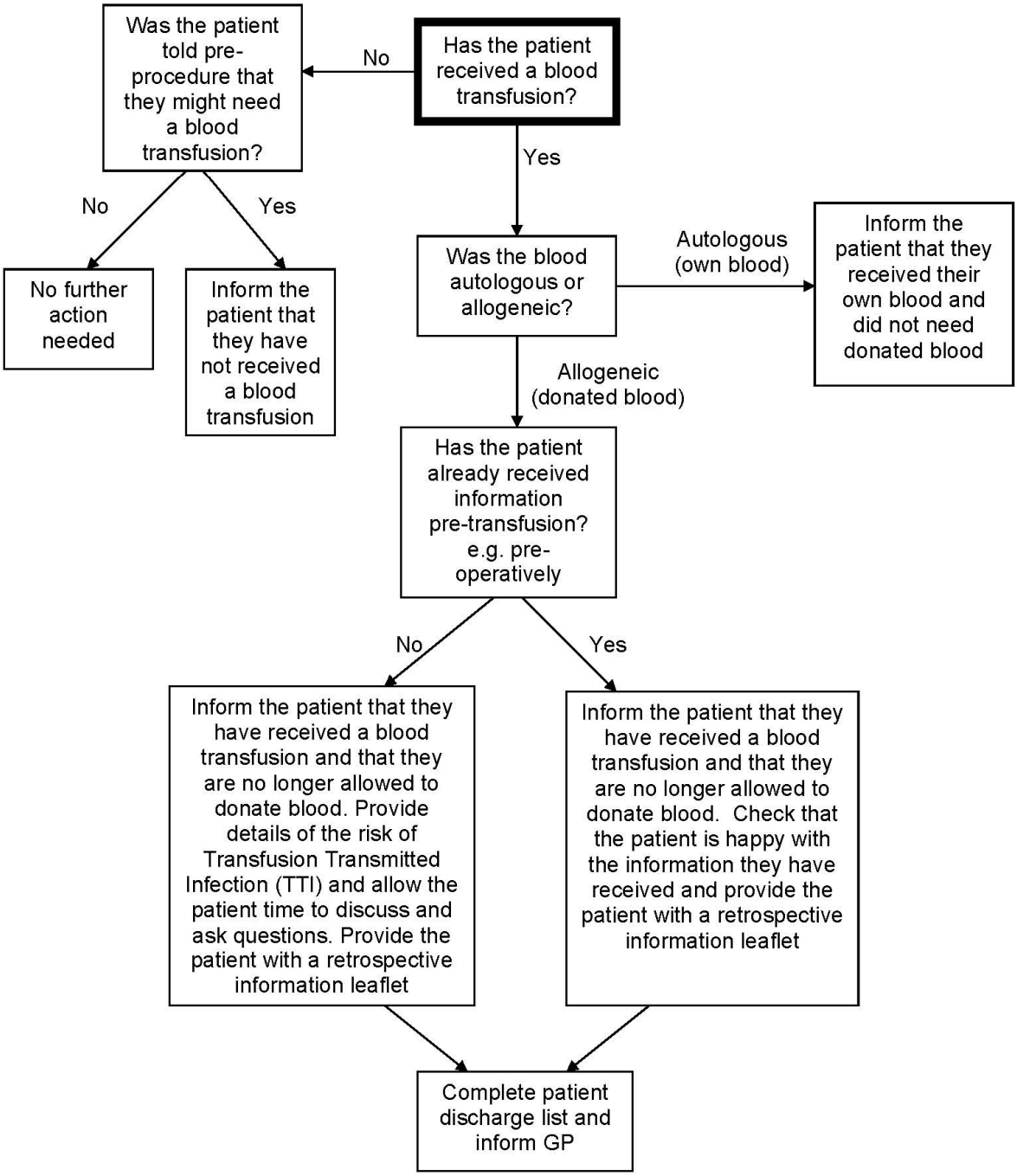
N.B. Observations must be recorded before collection, within 15 minutes & at the end of every unit.

RECORD OF ADMINISTRATION

It is a legal requirement to complete the traceability sticker on the blood bag label & return it to the Transfusion Lab via the Blood Transfusion Register (within a week of transfusion).

Please affix blood compatibility / fractionated product report form(s) below and record details of administration as indicated on form.

Appendix 4: Retrospective Patient Information Flowchart



October 2011

APPENDIX 5 – TECHNICAL ASPECTS OF BLOOD COMPONENT ADMINISTRATION

Venous Access

- Blood components can be administered through peripheral intravenous cannula or most central venous access devices (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.
- Peripherally inserted long central catheters (PICC lines) with narrow lumen diameter may lead to slower flow rates.

Administration Equipment - Adult Administration *(please refer to NICU guidelines for neonates)*

- All blood components should be transfused through a blood component administration set with an integral mesh filter (170-200 micron).
- The use of additional bedside leucodepletion filters is unnecessary, as the pre-storage leucodepletion of all blood components has been implemented by the UK Blood Services since 1999.
- Platelet administration sets are available though it is not essential that these are used and platelets can be given through a standard blood administration set. Platelet administration sets contain the same integral mesh filter (170-200 micron) as a blood administration set, but have a smaller lumen and thus a smaller priming volume. Platelets should not be transfused through an administration set which has previously been used for other blood components.
- The administration set should be changed at least every 12 hours (or in accordance with manufacturer's instructions). This is intended to reduce the risk of bacterial growth occurring.
- A new administration set should be used if another infusion is to continue after the transfusion. This is intended to reduce the risk of incompatible fluids or drugs causing haemolysis of residual red cells in the administration set or drip chamber.

Infusion Devices

- Individuals using any type of infusion device should be able to demonstrate competency in their use.
- Only use a blood component administration set that is compatible with the infusion device (check manufacturers recommendations).
- Administration sets used with infusion devices should incorporate an integral mesh filter (170-200 micron).
- The pre-administration checking procedure should include a check of the device and device settings.
- Infusion devices should be regularly maintained in accordance with manufacturers and/or organisational guidelines.
- Any adverse outcome as a result of using an infusion device to transfuse red cells should be reported to the appropriate authorities.

Infusion rate devices

- Either gravity or electronic infusion devices may be used for the administration of blood and blood components (in accordance with manufacturer's instructions) and allow a precise infusion rate to be specified.
- The volume delivered should be monitored regularly throughout the infusion to ensure that the expected volume is delivered at the required rate.
- Rapid infusion devices may be used when large volumes have to be infused quickly, as in massive haemorrhage. These typically have a range of 6 to 30 litres/hour and usually incorporate a blood warming device.
- Infusion devices should only be used if the manufacturer verifies them as safe for this purpose and they are CE marked.

Pressure Devices

- External pressure devices make it possible to administer a unit of red cells within a few minutes. They should only be used in an emergency situation together with a large gauge venous access cannula or device and should be certified by the manufacturer for use in rapid transfusion of blood components and used according to manufacturer's instructions.
- External pressure devices should:
    - exert pressure evenly over the entire bag
    - have a gauge to measure the pressure

- not exceed 300mm Hg of pressure
- be monitored at all times when in use

Blood Warmers

- Most published guidelines only recommend the routine use of blood warmers in adult patients undergoing rapid or high volume transfusion of red cells in the context of major haemorrhage.
- Guidance from NICE recommends that, in all adults undergoing elective or emergency surgery (including surgery for trauma) under general or regional anaesthesia, 'intravenous fluids (500ml or more) and *blood products* should be warmed to 37°C'. Any benefit will mainly accrue from the controlled warming of red cells (stored at 4°C) rather than platelets (stored at 22+/-2°C) or FFP/cryoprecipitate (thawed to 37°C) but there is no evidence to suggest that infusion of platelets or FFP through a blood warmer is harmful.
- Blood warmers are also appropriate in the transfusion of patients with clinically significant cold agglutinin antibodies.
- In most other clinical situations where there is concern, it is sufficient to allow blood to come up to ambient temperature before transfusion. Each patient should be assessed and the risks of potential heat loss considered. Special consideration should be given when rapidly transfusing large volumes to neonates, paediatrics, elderly patients, and patients susceptible to cardiac dysfunction.
- Blood should only be warmed using approved, specifically designed and regularly maintained blood warming equipment with a visible thermometer and audible warning. Settings should be monitored regularly throughout the transfusion.
- Equipment should be certified by the manufacturer for the warming of blood components and used according to manufacturer's instructions.
- Blood components should never be warmed using improvisations, such as putting the pack in warm water, in a microwave or on a radiator.

Compatible Intravenous Fluids

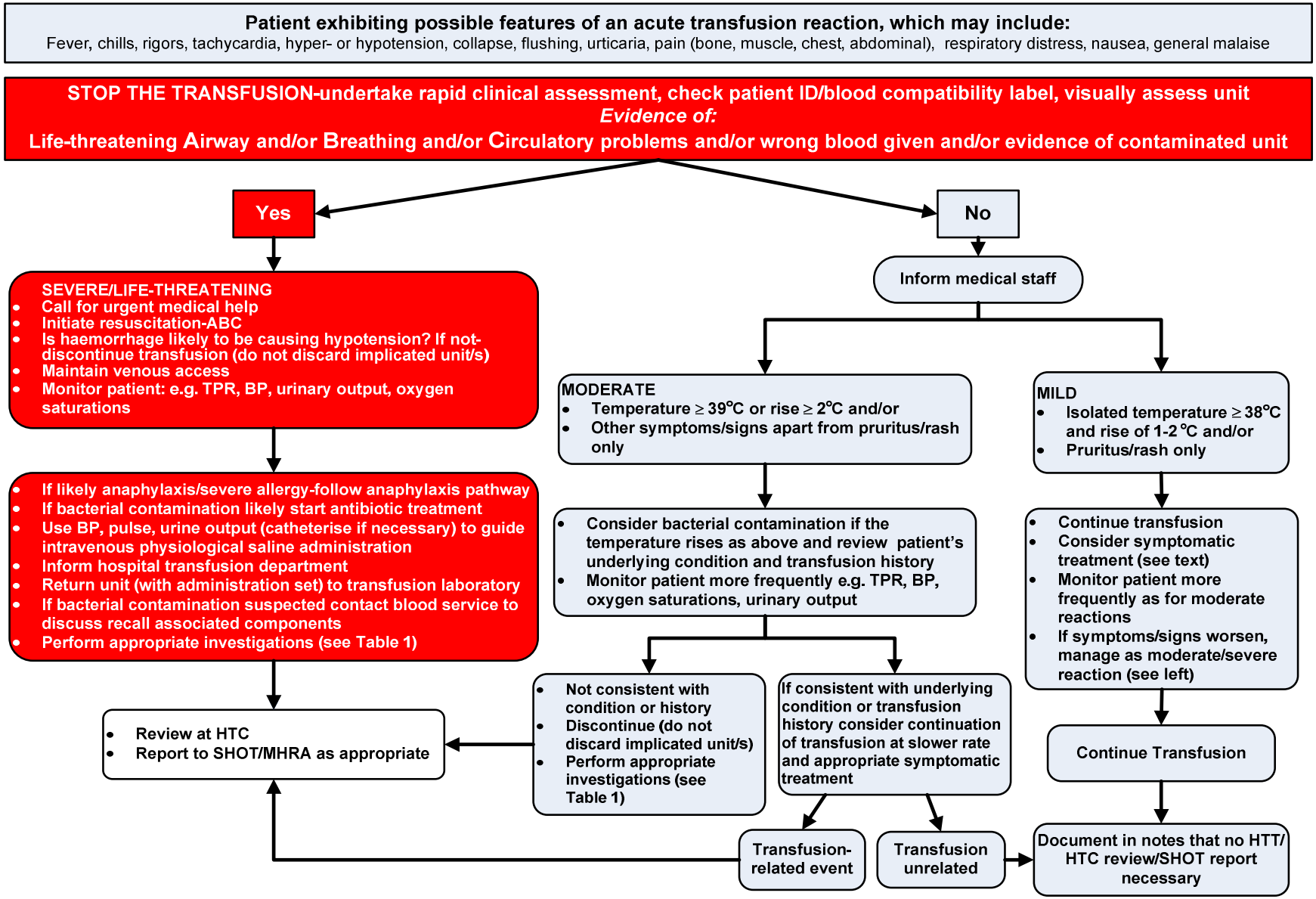
- It is generally advised that no other intravenous fluids or drugs should be co-administered via an infusion line that is being used for a blood component, or via a single lumen venous access device
- When multi-lumen *central* venous access devices are used it is generally safe to co-administer other therapeutic solutions through a different lumen as rapid dilution occurs in the bloodstream. Any other multi-lumen peripheral access devices or three-way tap devices need to be risk assessed.
- Intravenous solutions which contain calcium, such as Ringer Lactate, and calcium-containing colloids, such as Haemaccel™ or Gelofusine™ may antagonise citrate anticoagulant and allow clots to form in the blood component.
- Hypotonic intravenous solutions, such as 5% dextrose in water, may cause haemolysis of red cells.
- The practice of priming or flushing administration sets used for the transfusion of blood components with isotonic (0.9%) saline is unnecessary.

Co- administration of Drugs with Blood Components

- The addition of a drug to an intravenous line containing blood or blood components raises concerns about compatibility of the drug and its carrier with the blood component and any preservatives or additives.
- A break in the integrity of the infusion line may also increase the risk of bacterial contamination of the component.
- Studies have shown that standard concentrations of morphine, hydromorphone or pethidine given by continuous infusion or single or multiple boluses have no significant deleterious effects on co-administered red cells.
- In the case of opioids via PCA, in patients with adequate access, a second venous access device would be the preferable option. For the administration of any other drugs, wherever possible drugs should be timed to be administered between transfusions, or administered via a second venous access device. If this is not possible, the transfusion should be stopped and the line flushed with normal saline, the drug administered, then the line flushed again with saline before restarting the transfusion. This manoeuvre should not result in transfusion exceeding four hours from removal from temperature controlled storage.
- Under no circumstances should drugs be directly added to a blood component bag.

Reference: BCSH Guideline on the Administration of Blood Components (2009)

Appendix 6



Reference: BCSH Guideline on the investigation and management of Acute Transfusion Reactions (2012)

Appendix 7

Suggested Investigation of Moderate or Severe Acute Transfusion Reactions

Symptoms	Investigations
Fever (≥2°C rise or ≥39°C), and/or chills, rigors, myalgia, nausea or vomiting and/or loin pain	Standard investigations* Take samples for repeat compatibility testing, DAT, LDH and haptoglobin Take blood cultures from patient Coagulation screen Do not discard implicated unit **If febrile reaction sustained,** return unit to laboratory, repeat serological investigations (compatibility testing, antibody screen and DAT), haptoglobin and culture unit **If loin pain,** perform serological investigations as above
Mucosal swelling (angio-oedema)	Standard investigations* measure IgA level (EDTA sample)- if <0.07g/L , and no generalised hypogammaglobulinaemia, perform confirmatory test with sensitive method and check for IgA antibodies
Dyspnoea, wheeze, or features of anaphylaxis	Standard investigations* Check oxygen saturation or blood gases. Chest X-ray (mandatory if symptoms severe) If severe or moderate allergy suspected measure IgA level. If severe allergy/anaphylaxis suspected, consider measurement of serial mast cell tryptase (plain tube) (immediate, 3 h and 24 h)
Hypotension (isolated fall systolic of ≥30 mm resulting in level ≤80mm)	Investigate as for fever If allergy suspected measure IgA level. If severe allergy/anaphylaxis consider measurement of serial mast cell tryptase, as above

* Standard investigations: full blood count, renal and liver function tests, and assessment of urine for haemoglobin

Abbreviations: DAT, direct antiglobulin test; Ig, immunoglobulin; LDH, lactate dehydrogenase;

Appendix 8

Investigation of a Transfusion Reaction

In the case of moderate or severe reaction associated with transfusion of a blood component, please contact a Haematologist, complete answers to the following questions and send to BLOOD TRANSFUSION DEPARTMENT as soon as possible, together with the samples detailed below.

Patient's name ……..……..Hospital no……..……D.O.B…….

Ward……Consultant……..……..

Summary of Medical History……

……..

Reason for Transfusion:

Symptoms:

hypotension?……bronchospasm?……pain at infusion site?……..…SOB?……jaundice?……..

other…….

Time and Date of Commencement of Transfusion…….…….

Time and Date of First Onset of Symptons……...

Volume of Blood or Plasma given before Symptoms Commenced……..

Other drugs or Intravenous Fluids given?……

Time Interval Between Removing Blood from Bank and Transfusion……...

Past History

Has the Patient Received a Previous Transfusion (details) ……

……

Any reactions?…….

Was there a Satisfactory response to Previous Transfusions?……

In the Case of a Female, have there been any pregnancies?……

Samples for Investigation: Please discuss with Haematologist

Time and date of Collection……
All blood bags should be returned to department (Please ensure they will not leak)

Signature……Time……..

Print Name……..Date…….

For Laboratory use						Pre transfusion sample		Post transfusion sample	
Product	Bag No	Bag Group	Expiry Date	Cross-match	DAT	Lab No:		Lab No:	
						ABO:	Rh D:	ABO:	Rh D:
						Ab screen	IAG	Ab screen	IAG
						SC1		SC1	
						SC2		SC2	
						SC3		SC3	
						DAT		DAT	
						RT Auto		RT Auto	

CONSULTATION ROUTE

Name	Role
Amit Goswami	Consultant Anaesthetist
Ana Terlevich	Consultant Gastroenterologist
Andrew Kettle	Facilities Manager
Angela Walker	Pre-operative Assessment Nurse Manager
Anne Robertson	Transfusion Lead, Emergency Department
Anthony Ward	Musculoskeletal Consultant
Axel Heep	Consultant Physician, NICU
Begoña Bovill	Consultant Physician, Medicine
Cathy Malloy	Matron, Women's Health
Christina Laxton	Anaesthetist, Trust Lead for Intra-operative Cell Salvage
Christine Fowler	Patient Panel Representative
Christine Tinline-Purvis	Senior Clinical Audit Facilitator
Claire Husain	Emersons Green Treatment Centre Representative
Crispin Wigfield	Clinical Director, Neurosurgery
David Gibbs	Pathology Sciences Manager
Dawn Bowden	Patient Safety Co-ordinator, Clinical Risk
Dominique Duma	ITU Matron
Elmarie Cairns	Blood Conservation Coordinator
Fiona Barnard	Clinical Risk Manager
Frank Hamill	Clinical Audit and Assurance Manager
Halina Collingbourne	Haematology Quality Manager
James Hopkins	Surgical Consultant
James Murray	Consultant Surgeon, Musculo-skeletal
Jane Bourne	Blood Transfusion Lead., Emergency Department
Jane Hadfield	Assistant Director of Education, Research, Development
Janet Birchall	Consultant Haematologist
Joanna Crofts	Obstetric Consultant
Jules Blackham	Emergency Department Consultant
Karen Harding	Musculoskeletal Consultant
Karen Mead	Specialist Practitioner of Transfusion
Katherine Walsh	Musculoskeletal Consultant
Michael Kelly	Musculoskeletal Consultant
Michael Milne	Clinical Director, Core Clinical Services
Michelle Jackson	Advanced Neonatal Nurse Practitioner, NICU
Mooi Tay	Clinical Skills Lead, Practice Development
Nicola Mackey	Clinical Matron, Surgery
Simon Odum	Consultant Physician, Emergency Department
Steve Harper	Consultant Renal Physician
Talal Valliani	Consultant, Gastro specialty, Medical Directorate
Thelma Richards	Ward Sister, Musculoskeletal
Tim Wreford-Bush	Blood Transfusion Laboratory Manager
Timothy Hooper	Consultant Intensivist
Tracey Lucas	Ward Manager, Medical Directorate