Western Health and Social Care Trust

Policy for Blood Component Transfusion in Neonates & Older Children

May 2013

Policy Title	Policy for Blood Component Transfusion in Neonates and Older Children
Reference Number	WC13/007
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Review Date	June 2016 This policy will be reviewed every three years (or sooner if changes in legislation). This policy has been developed within the context of Equality and Human Rights statutory obligations and requirements.
Responsible Officer	Haemovigilance Practitioner on behalf of the Hospital Transfusion Committee

Western Health and Social Care Trust

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1.0 Background to Policy

Correctly used, blood components can save lives and provide clinical benefit to many patients. However, a blood component transfusion is potentially hazardous and should only be given when the clinical benefits to the patient outweigh the potential risks.

SHOT[1] (Serious Hazards of Transfusion) is a United Kingdom (UK) organisation that collates and analyses data on adverse transfusion events on an annual basis. SHOT[1] demonstrates that the biggest risk to the patient is an incorrect blood component being transfused with human error being the main contributing factor.

Within the WHSCT, all staff involved in the blood transfusion process must have a valid training and competency assessment:-

- TRAINING refers to the knowledge base required and the instruction of tasks related to blood transfusion (face to face session or completion of the elearning programme www.learnbloodtransfusion.org.uk). Training should be undertaken every 12 to 18 months[2] (12 months if staff member involved in the collection of a blood component[3]).
- COMPETENCY is the practical assessments to demonstrate safe practice of the relevant blood transfusion process and is renewed every 3 years[4].

The Safer Practice Notice 'Right Patient, Right Blood' issued by the NPSA[4] (National Patient Safety Agency) and endorsed in Northern Ireland by the Department of Health, Social Services and Public Safety (DHSSPS) was designed to improve the safety of blood transfusions and to promote strict checking procedures at each stage of the blood transfusion process. The main initiative in the Safer Practice Notice requires that staff involved in any of the processes of transfusion must successfully complete competency assessment **every 3 years**. The competencies are: -

1. Obtaining a venous blood sample for pre-transfusion testing.
2. Organising a request for a blood component for transfusion.
3. Collecting a blood component for transfusion.
4. Preparing and administering a transfusion of a blood component.

This document outlines the Trust's policy on obtaining a sample for pretransfusion testing, prescribing blood components, requesting blood components, preparing and administering a transfusion, the initial management of adverse reactions and/or events and a summary on the use of blood products.

This Policy recommends the use of the Health and Care (H&C) Number as the Unique Identification Number. If a H&C number is not immediately available for a newborn baby, the AH or ERN number should be used until the H&C number is available. Blood Bank should be informed if no H&C number is available prior to sending the sample to Blood Bank.

Regional[5], National and European guidelines in relation to the administration of blood components have been reviewed to prepare this policy in an effort to utilise best available evidence to ensure good clinical practice.

Key recommendations from the NI Regional Blood Transfusion Policy that have been implemented within this Policy include:-

- Positive patient identification.
- The policy is benchmarked against the WHSCT Patient Identification Wristband Policy[6].
- A 'no wristband, no transfusion' policy.
- A detailed protocol which outlines every step of the blood transfusion process.
- All staff participating in the transfusion process must be appropriately trained and assessed and deemed competent to NPSA standards[4].
- Where possible, the patient should be informed of the needs for the transfusion, and consent obtained and recorded in the patient's clinical notes.
- All clinical details relating to the transfusion should be documented in the patient's clinical notes, including the decision process for the transfusion, details of the blood components transfused and the date/time each unit was administered, patient monitoring observations, the outcome of the transfusion and the management of any adverse events.

2.0 Objectives of the Policy

This policy aims to provide guidance to all staff involved in the blood transfusion process for the safe and appropriate use of blood components to Neonates and/or Paediatrics within the Western Health and Social Care Trust (WHSCT).

This policy also aims to: -

a) Minimise blood loss – most red cell transfusions are given to replace blood drawn for monitoring, therefore micro-techniques, non-invasive monitoring and avoidance of unnecessary testing should be used to reduce transfusion needs.

b) Minimise donor exposure – neonates who may require several red cell transfusions within a few weeks should be allocated to a 'paedipack' system, where one donation is divided into four to eight small packs that can be used for sequential transfusions over the shelf life of the red cells (five weeks). This means, the number of donors whose blood is transfused to the neonate is minimised. Close liaison between the clinical area and Blood Bank is essential to achieve optimal use of 'paedipacks' and ensure that all babies likely to receive more than one transfusion are identified. The Blood Bank should be advised at the time of first transfusion of all babies less than 30 weeks gestation or with haemolytic disease who may require multiple transfusions.

3.0 Definition of Blood Component

The term 'Blood Component' is used throughout this policy. 'Blood Component' refers to: -

- Red Blood Cells (hereafter referred to as Red Cells)
- Platelets
- Fresh Frozen Plasma (hereafter referred to as FFP)
- Cryroprecipitate

4.0 Suitable locations for storage of Blood Components

- Red cells must only be stored in temperature controlled blood refrigerators certified for use - not in clinical or other domestic refrigerators.
- Red cells may be transported in boxes that are designated for this purpose and have being validated locally.
- Platelet function is best maintained by storage at 22^{o}C (room temperature) with agitation[7]. Platelets are NEVER stored in a blood fridge.

4.1 Summary of storage of Blood Components

BLOOD COMPONENTS	STORAGE	LIFESPAN
Red Cells 	Temperature Controlled Fridge (+2 to +6°C)	35 days Expires 12 midnight on date shown
Paedipack  1 unit = 4 to 8 aliquots	Temperature Controlled Fridge (+2 to +6°C)	35 days Expires 12 midnight on date shown
Platelets 	Agitator in Blood Bank Room temperature	5 days Expires 12 midnight on date shown
FFP 	Freezer – then thawed (takes 30 minutes) Once defrosted can be stored in temperature controlled fridge (+2 to +6ºC) in Blood Bank for 24 hours	Transfuse as soon as possible
Cryoprecipitate 	Freezer – then thawed (takes 30 minutes) Once defrosted, stored at room temperature	Transfuse as soon as possible Once thawed, never put in fridge & must be used within 4 hours

5.0 Definition of Responsibilities

Many groups of staff are involved in one or more aspects of blood transfusion. Some procedures are exclusively the responsibility of one staff group, others can be carried out by more than one staff group. It is important that the responsibilities of each staff group are defined and that each member of staff in that group are aware of their responsibilities and the responsibilities of others within the process.

5.1 **WHSCT Management** is responsible for the following: -

- Ensuring that there is senior management commitment to the HSS Circular HSS(MD) 17/2011[2].
- Ensuring appropriate membership and function of the Hospital Transfusion Committee.
- Ensuring appropriate composition and function of the Hospital Transfusion Team.
- Ensuring appropriate blood transfusion policies are implemented and reviewed.
- Ensuring compliance with the Blood Safety and Quality Regulations[3].

5.2 **WHSCT Hospital Transfusion Committee (HTC)** is responsible for the following: -

- Develop Trust policies and protocols (based on national, regional and local guidelines) and oversee their implementation and progress.
- Ensure there are systems in place to monitor and report on blood transfusion practice and the use of blood components and blood products.
- Analyse trends and learning from audits, complaints, clinical incidents and serious adverse incidents and support changes in practice to minimise recurrence.
- Monitor the education and training of all staff involved in the blood transfusion process to ensure that staff have required training and competency to participate in the blood transfusion process.
- Ensure there are communication systems in place to provide feedback on blood transfusion practice and the use of blood components and blood products.
- Advise on a local contingency planning for the management of blood shortages[8].
- Report as required to the Northern Ireland Transfusion Committee (NITC)
- Participate in the activities of the NITC as required.
- Consult with local patient representatives groups where appropriate

5.3 **WHSCT Hospital Transfusion Team (HTT)** is responsible for the following: -

- Assisting in the implementation of the HTCs objectives.
- Promoting and providing advice and support to clinical teams on the appropriate and safe use of blood.
- Actively promoting the implementation of good transfusion practice.
- Being a resource for training of all clinical, laboratory and support staff involved in clinical aspects of the blood transfusion process.
- Clearly defined annual work plans reflecting the objectives of the HTC.

5.4 **Haemovigilance Practitioners** are responsible for the following: -

- Ensuring quality improvements in transfusion.
- Reviewing, implementing and disseminating policies and procedures pertaining to transfusion.
- Minimising risk associated with transfusion.
- Education and development – inducting and updating of all clinical and support staff involved in clinical aspects of the blood transfusion process.
- Facilitating competency based training and assessment to comply with the requirements of the NPSA[4].
- Investigation and reporting of transfusion reactions and other untoward incidents related to blood transfusion.
- Facilitating clinical audit and review of all clinical aspects of the blood transfusion process.
- Acting as a clinical specialist to advise individuals, clinical teams, patients and outside agencies relating to the blood transfusion process.
- Developing, compiling and disseminating regular management reports relating to audit reports and component use.

5.5 **Clinical staff are responsible for the following providing they have the relevant training and competency assessment (see 1.0):-**

Staff Group	Competency 1 Obtaining a venous blood sample for pre-transfusion testing	Competency 2 Organising a request for a blood component for transfusion	Competency 3 Collecting a blood component for transfusion	Competency 4 Preparing and administering a transfusion of a blood component
Doctor	√	√	X	√
Nurse/Midwife	√	√	√ (SWAH*, & Theatres, Altnagelvin)	√
Health Care Assistant	√	X	√ (SWAH & Tyrone County)	X
Porter	X	X	√	X
Operating Department Assistant	X	X	√	X
Theatre Orderlies	X	X	√ (Satellite Blood Fridge)	X
Operating Department Practitioner	√	√	√	√
Phlebotomist	√	X	X	X

*SWAH – South West Acute Hospital

5.6 **Medical staff** are also responsible for the following: -

- Assessing the patient's blood component requirement.
- Prescribing blood components stating component, quantity, duration of transfusion and any special requirements (eg CMV negative, irradiated).
- Ensuring adequate documentation of blood transfusion in the medical case notes.
- Responding to, investigating and treating adverse events to transfusion.
- Informing the patient/parent/guardian of the indication for the blood transfusion, its risks and benefits, his/her right to refuse the transfusion and alternatives to a transfusion if available.
- Informing the General Practitioner about the transfusion of multiple blood components and / or blood products to the patient during hospital admission via the medical discharge letter.
- Informing the patient/parent/guardian of the increased risk of contracting vCJD through transfusion.

5.7 **Nursing Staff are also responsible for**:-

- Monitoring the patient during the transfusion and carry out appropriate actions in the event of adverse reaction or event.
- Reporting transfusion reactions or other incidents related to transfusion to the Blood Bank.

5.8 **Biomedical Scientists in Blood Bank are responsible for: -**

- Ensuring labelling of request forms and blood samples comply with regionally agreed guidelines for accepting and rejecting samples for testing.
- Performance of blood grouping, antibody screening and pretransfusion compatibility testing.
- Checking laboratory records for historical blood group information and any special requirements flagged in patient's laboratory record.
- Ensuring blood components are issued according to recommended guidelines.
- Ensuring blood components are properly labelled.
- Ensuring the identification details of the patient and the blood unit to be transfused are the same on the compatibility label attached to the pack and on the blood compatibility report form.
- Assisting in the investigation and reporting of transfusion reactions and other untoward incidents related to blood transfusion.
- Ensuring participation in the National Blood Stocks Management Scheme to monitor blood usage and wastage.
- Conducting laboratory audits.
- Adherence to Blood Safety and Quality Regulations[3].

5.9 **Drivers are responsible for**: -

- Ensuring safe and timely (where possible) transportation of blood components around the province in the appropriate transport boxes.

6.0 Decision to Transfuse

Due to increasing concerns about the safety of transfusion, the increasing complexity and cost of the production of blood components and the shortage of blood donors, there is a need for sensible guidelines for the use of blood components.

The decision to transfuse **must** be made by a doctor or a non medical prescriber (an appropriately trained, competent and locally authorised registered practitioner[9]) in accordance with recommended guidelines (Appendix One and Appendix Two) and the reason for the transfusion **must** be recorded in the patient's case notes. It is imperative to avoid the unnecessary use of blood components[2]. Therefore Blood Bank staff will query the appropriateness of requests for transfusion against the local guidelines for use of blood components. If the reason for the transfusion is unclear, clinicians will be encouraged to contact a Consultant Haematologist to discuss the request.

It is generally considered best practice not to routinely transfuse patient's overnight (20.00hrs to 08.00hrs) due to an increased risk of errors and difficulties in monitoring and observing the patient at night.

Red cells and Platelets for Neonates (up to the chronological age of 20 weeks) and all Intrauterine Transfusions should be Cytomegalovirus Negative (CMV negative). All paedipacks will be CMV negative.

6.1 Use of Red Cells

Red cell transfusion is indicated to increase the oxygen carrying capacity of the blood when acute or chronic anaemia contributes to inadequate oxygen delivery to tissues.

6.2 Use of Platelets

Platelets play a primary role in the maintenance of haemostasis (i.e. the prevention of bleeding). Platelet transfusions are indicated for the prevention and treatment of haemorrhage in patients with thrombocytopenia or platelet function defects.

Platelets are not routinely stocked in the WHSCT and are ordered on request from the Northern Ireland Blood Transfusion Service (NIBTS).

6.3 Use of FFP

FFP is plasma that has been removed from whole blood donation and frozen within a specific time period after collection.

Imported FFP (methylene blue treated pathogen reduced) should be used for all recipients born on or after 1st January 1996 (i.e. those unlikely to have been exposed to BSE through diet) – this measure should continue, even when those recipients become 16 years old or more[10].

FFP should never be used as a simple volume replacement and it is not clearly superior to crystalloids or colloids in the management of neonatal hypotension. The only indications for FFP in neonates that are supported by evidence are Disseminated Intravascular Coagulopathy (DIC), Vitamin K dependent bleeding and inherited deficiencies of coagulation factors[11].

SEE APPENDIX ONE FOR SUGGESTED TRANSFUSION THRESHOLDS FOR INFANTS UNDER 4 MONTHS.

6.4 Use of Cryoprecipitate

Cryoprecipitate is produced after freezing and thawing FFP to precipitate high molecular weight proteins and should be considered to replace fibrinogen and factor VIII when the fibrinogen result is less that 1.0g/l. Target fibrinogen level should be greater than 1.0g/l. Recommended dose is 5 – 10ml/kg for infants and older children[7]. Ensure Cryoprecipitate is issued in accordance with the Guidance on Use of Fresh Frozen Plasma and Cryoprecipitate (Appendix Two).

7.0 Emergency use of Red Cells

- Contact Blood Bank if Paedipacks are required in an emergency.
- Red cells for Neonates (up to the chronological age of 20 weeks) should be Cytomegalovirus Negative (CMV negative). All paedipacks will be CMV negative.
- Where small volume transfusions are being drawn into a syringe for transfusion, the appropriate blood component administration giving set must be used.

7.1 Issuing Group Specific Red Cells

When the situation warrants immediate action, and the risk of not transfusing outweighs the risk of waiting for a crossmatch, red cells of the patient's ABO and Rh type (group specific red cells) can be provided in 15 minutes, provided the Blood Bank have a suitable accurately labelled sample available.

7.2 Emergency Uncrossmatched O Rhesus D Negative Red Cells (Flying Squad)

Emergency Red Cells is Group O Rhesus D negative and has not been cross matched against the patient for transfusion. There are risks associated with transfusing uncrossmatched O Rhesus D negative red cells. Where the patient's blood group is known and confirmed, it is safer to transfuse ABO Rhesus D compatible red cells (group specific red cells). Emergency O Rhesus D negative red cells must only be used when the patients' condition indicates that there is no time to wait for group specific red cells (i.e. life threatening emergency).

A sample for group and screen must be taken from the patient prior to the infusion of the uncrossmatched O Rhesus D negative red cells.

Hospital	Location	Number of Units
Altnagelvin	Satellite Blood Fridge, Recovery Area, Main Theatres	6
SWAH	Blood Bank Issue Fridge	2
Tyrone County	Blood Issue Fridge, Cardiac Assessment Unit	6

7.3 Using Emergency Uncrossmatched O Rhesus D Negative Red Cells (Flying Squad)

If it is necessary to use the emergency uncrossmatched O Rhesus D negative red cells the following procedure must be adhered to:

- Inform the Blood Bank when the emergency red cells are removed. This ensures the Blood Bank replaces the red cells for potential use elsewhere.
- Staff member completes details regarding date/time removed and prints staff name on the Blood Traceability Record(s) (Appendix Seven).
- SWAH / Tyrone County – two units are in each Red and White Box in the Blood Issue Fridge with Blood Traceability Records in the pocket on the outside of the transport box (do not break seal on the box until the units are going to be transfused).
- Altnagelvin - place the unit(s) in the blue blood transport bag and place a cool pack on top of the unit (if more than two units being selected use the 4 or 6 unit boxes as appropriate. The blood transfer box should have the least air possible - i.e. fill all residual space with cool packs).
- Complete relevant documentation at Blood Issue Fridge regarding units removed.
- Take immediately to the clinical area and hand to a qualified member of staff.
- After the red cells have been transfused, the Blood Traceability Record should be completed with the patient's details (first name, surname, date of birth, unique identification number) and returned to the Blood Bank to ensure full traceability of the used units.
- Should circumstances change and the emergency red cells are no longer required it should be returned to the Blood Issue Fridge within 30 minutes to prevent wastage (complete relevant documentation regarding date, time and details of staff member who returned unit).
- If the units are returned greater than 30 minutes after time of removal, do not place into Blood Issue Fridge – return to Blood Bank where Blood Bank staff will complete documentation indicating that unit was wasted (Tyrone County – place unit in quarantine drawer and telephone Blood Bank, SWAH).

8.0 Obtaining a venous sample for pre transfusion testing

Staff responsible for obtaining a venous sample for pre transfusion testing must be competent at venepuncture, have their knowledge on transfusion practice updated within the previous 18 months and have successfully completed Competency 1 'Obtaining a venous sample for pre transfusion testing' within the last three years.

If you are interrupted or distracted at any stage during the checking procedure you should start again.

In line with the DHSSPS (HSS (MD) 30/2008) and UK National Screening Committee policy, all babies born from 1 March 2012 require newborn screening for sickle cell disorders (SCD). For this reason, if the neonate requires a transfusion of Red Cells before Day 5, they must have a 'Blood Spot' taken pre transfusion.

8.1 **Completion of NI Hospital Transfusion Request Form (Appendix Three)**

- Information required to be completed accurately and legibly (an addressograph can be used on the request form) on the pre transfusion request form: -
  - Unique Identification Number.
  - Patient's surname.
  - Patient's first name – for newborn not yet named, this will be 'Infant' for single birth; or Infant I of II or Infant II of II etc if multiple birth.
  - Patient Postcode.
  - Date of Birth.
  - Gender.
  - Consultant.
  - Hospital.
  - Location of patient at time of request.
  - Transfusion History (check medical casenotes / laboratory system).
  - If infant under 4 months of age, record mother's unique identification number, first name, surname, and date of birth on 'Laboratory Comments' section.
  - Whether the sample is for Group and Screen or Group and Cross Match
  - Date and time sample taken.
  - Printed name and signature of staff member who took the sample (confirming that the patient identification details correspond to the details of the patient, the patient identification wristband, request form and the sample tube).
  - Record staff number if applicable (Medical staff – record GMC number).
- If a Group and Cross Match is required the following information is also required: -
  - Amount of blood component (mls) or number of units, time and date required (**if it is an emergency please follow up with a phone call to Blood Bank**).
  - Any special requirements (e.g. CMV negative, irradiated) (Appendix Four).
  - Where blood component must be sent.
  - Indication for red cell transfusion.
  - Date and result of most recent Haemoglobin result.
  - Printed name and signature of staff member requesting the blood component.
- If additional blood components are required (and pretransfusion sample already in Blood Bank), complete the NI Hospital Transfusion Request Form regarding patient identification details and the Product Request Section.
- If the pre transfusion request form is not completed accurately, the sample will be rejected by Blood Bank.
- Blood Bank staff have the discretion to request the clinician to discuss blood component requirements with a Consultant Haematologist prior to issue.

8.2 **Obtaining the venous sample**

- For the neonate / child unable to give an accurate and reliable response: -
  - The patient's first name, surname, date of birth and Unique Identification Number must be identical to those on the patient's identification wristband, case notes and the pre transfusion request form.

  - Where possible confirm patient identity with another member of staff and/or parent or patient's carer/relative who can verify patient identification.
- For the older child, positively identify the patient (who is capable of giving an accurate and reliable response) by: -
  - Asking the patient for their first name (official name), surname and date of birth.
  - Asking the patient to spell their name.
  - Confirming that these details match those on the patient's identification wristband.
  - Confirming that the first name, surname, date of birth and Unique Identification Number on the patient's identification wristband corresponds with details on the pre transfusion request form.
- For the unidentified patient: -
  - The Unique Identification Number and gender are the minimum patient identifiers.
  - The Unique Identification Number and gender must be identical to those on the patient's identification wristband and the pre transfusion request form.
  - Blood Bank must be informed at the earliest opportunity when the patient identification details become available (a repeat sample will also be required when the appropriate patient identification details are available).
- For the neonate / child under 4 months a paediatric sample tube is used.
- For all infants greater than 4 months, at least 1ml of blood in a 6ml EDTA sample tube is required.
- Handwrite the sample tube at the patient's bedside immediately after taking the sample taking the details from the patient's identification wristband.
- Label the sample tube with the patient's first name, surname, date of birth, Unique Identification Number, ward, gender and then sign and date.
- Make a final check that the details on the patient's identification wristband correspond with the pre transfusion request form and the sample tube.
- Print name, sign, record Staff number, date and time on the request form.
- Record in the patient's case notes why, when and who took the sample.
- Take the sample to a designated collection point in the clinical area. If using a vacuum tube system, ensure you are correctly trained to use the system.

8.3 **Important points when obtaining a sample for pre-transfusion testing**

- Wherever possible, for neonates and infants under 4 months, samples from both mother and infant should be obtained for initial ABO and RhD group determination.
- For the newborn initially known as 'Infant' and then given a name, relevant documentation and the patient identification wristband should be updated accordingly. Any further pretransfusion samples should use the infant's correct given name i.e. the same as the updated patient identification wristband. Staff in Blood Bank can arrange for data recorded under 'Infant' on the Laboratory system to be merged providing that the Unique Identification Number, Surname and Date of Birth of the infant remain the same – a repeat sample need not be taken once the infant is named.

- All inpatients, outpatients, patients attending the A&E department and day-case patients must wear a patient's identification wristband when they require a sample to be taken for pretransfusion testing.
- Only one patient must be bled at a time by a member of staff in a continuous uninterrupted process to minimise the risk of sample error.
- Samples for pretransfusion testing should not be taken from the arm that has an infusion in progress - this may result in a diluted sample being sent for testing or a spurious laboratory result being obtained.
- Sample tubes should be correctly filled.
- Sample tubes **must not** be pre-labelled.
- All details **must** be handwritten legibly on the sample tube – addressograph labels (or any form of adhesive labels) must not be used on the sample tube.
- The sample tube must be handwritten by the person taking the sample immediately after the sample has been taken and at the patient's bedside.
- It is essential to use the patient's official name and to spell the patient's name correctly and consistently.
- Avoid using roller ball or fountain pen when recording details on sample tube.
- After the sample is taken, the blood should be mixed gently in the tube.
- If a patient poses a potential infection risk e.g. Category 3 status, their samples should be labelled accordingly.
- In an emergency situation, samples should be hand delivered to the Blood Bank and the staff member taking the sample should be aware of the urgency of the situation.
- Blood Bank must be contacted to alert them of the emergency.
- Samples that will be rejected – under-filled samples; haemolysed samples; inadequately/incorrectly labelled samples.

8.4 Telephone Requests

If sending a follow up request form for blood components please complete the following details on the NI Hospital Transfusion Request Form:-

- Patient demographic details (first name, surname, date of birth, unique identification number).
- Location of patient.
- Number and type of blood components required (including any special requirements).
- The indication for the request.
- The date and time the blood component is required.
- Sign and date the bottom of the request form.

If requesting Blood Components with Blood Bank via telephone:-

- A written record is kept in Blood Bank of all telephone requests including the identity of the person making the request and the person receiving the telephone request.
- The following information must be provided:
  - Patient's surname, first name and unique identification number.
  - Location of patient.
  - Number and type of blood components required (including any special requirements).
  - The indication for the request.

- The date and time the blood component is required.
- Clinical area contact number.

When blood components have been requested from Blood Bank, it must be documented in the patient's case notes to avoid duplication of request.

8.5 Compatibility Testing

Direct Antiglobulin Test (DAT) – Group & Coombs' Test

- Performed on the neonate's red cells (under 4 months of age)
- Small volume transfusions can be given repeatedly over the first 4 months of life without any further serological testing, provided that there are no atypical maternal red cell antibodies in the maternal / infant serum, and the infant's DAT is negative when first tested.
- Infants under 4 months of age rarely produce atypical red cell antibodies. If atypical antibodies are detected during testing, samples from both mother (if possible) and infant should be obtained to determine ABO and RhD type.

Group and Screen (or 'Group and Hold' or 'Group and Save')

- Performed on all infants greater than 4 months of age.
- The patient's blood sample is tested to determine the ABO and RhD type and to detect red cell antibodies in addition to anti A or anti B that could haemolyse transfused red cells.
- This procedure takes approximately 25 minutes to perform following receipt of a correctly labelled sample.

Group and Cross-Match

- The patient's blood is tested to determine the ABO and RhD type, to detect red cell antibodies that could haemolyse transfused red cells and to confirm compatibility with each of the units of red cells to be transfused.
- This procedure takes approximately 45 minutes to perform following receipt of a correctly labelled sample - this will be longer if the patient has antibodies.

8.6 Patient with antibodies

- A positive Direct Antiglobulin Test on the neonate's red cells or an atypical red cell antibody in maternal or neonatal serum suggests possible haemolytic disease of the newborn (HDN). In such cases, special serological procedure will be necessary to allow selection of appropriate blood.
- For the older child, if during antibody screening, is found to have antibodies present, a process of antibody identification will be carried out.
- Further samples might be required to be sent to NIBTS.
- Blood Bank should be informed of patients with known antibodies who are going to theatre.
- The Blood Bank staff will advise on the availability / time required to provide compatible blood should it be required.

8.7 Timing of Sample Collection In Relation To Previous Transfusions

- Blood samples will be retained in the Blood Bank for 7 days.
- A cross match can be performed on a sample up to 7 days old if the patient has not been recently transfused.

- Cross matched blood will be 'reserved' for 72 hours.
- Transfusion or pregnancy may cause a primary or secondary immune response and samples selected for cross matching or antibody screening must take account of this, so that newly developed antibodies are detected.
- When a patient is being repeatedly transfused, it is not necessary to submit a daily cross match sample. Such patients should be screened for the development of irregular antibodies at least every 72 hours (3 days).
- If a transfusion has been given more than 72 hours previously, a new sample is required according to the following guidance:-

Patient transfused within:	Sample to be taken (maximum)
3 to 14 days	24 hours before transfusion
14 to 28 days	72 hours before transfusion
28 days to 3 months	1 week before transfusion

9.0 Prescribing Blood Components

Staff involved in prescribing Blood Components must update their knowledge in transfusion practice (by e-learning or face to face training) every 18 months.

- The BSQR[3] excludes blood components from the legal definition of medicinal product. **The more correct term is 'written authorisation' of blood component as opposed to 'prescription'**. Blood components are not listed in the British National Formulary (BNF).
- Prescription (written authorisation) of blood components is the responsibility of medical staff or a non medical prescriber.
- The minimum data set which should be recorded in a patient's clinical notes concerning transfusion of a blood component is:-
    a) The clinical indication for transfusion.
    b) A note that the risks, benefits and alternatives have been explained to the patient or parent / guardian.
    c) Recent full blood picture or coagulation test on which the decision to transfuse is based.
    d) Prescription for the blood component(s) transfused.
    e) Vital signs as per BCSH guidelines[9].
    f) Post transfusion note or repeat blood test to determine response to transfusion.
- Blood components must be prescribed on the Blood Component Prescription and Transfusion Record (Neonates and Paediatrics).
- The Blood Component Prescription and Transfusion Record (Neonates and Paediatrics) must contain date, patient's surname, first name, date of birth, gender and Unique Identification Number.
- The prescription must state the blood component to be administered, amount (mls) or number of units to be given and duration of the transfusion.
- Any special requirements e.g. CMV-antibody-negative should be indicated on the prescription sheet.
- The transfusion of blood must be completed within 4 hours of removal from controlled temperature storage. A red cell transfusion in this Trust should be prescribed over a clearly stated time period that lies between 1 ½ to 3 hours.

- Any special instructions e.g. any medication required before or during the transfusion must be indicated on the patient's medicine kardex.
- The prescription should be signed by the member of medical staff.
- In a non-urgent situation, blood components must not be transfused that are not prescribed[1].

10.0 Consent to Transfusion

- Although gaining written consent for transfusion of blood components is not a legal requirement in the United Kingdom, there is a responsibility to ensure that the patient or parent / guardian receives adequate information regarding the transfusion.
- In planned circumstances, patients and parent / guardian should be provided with advance information and opportunity to ask questions about the risks and benefits of transfusion. They should also be informed about any suitable and available transfusion alternatives[2].
- This should be recorded in the Blood Component Prescription and Transfusion Record (Neonates and Paediatrics).
- Provide a patient information booklet:
  - For the parent/guardian, leaflets available in clinical area 'Babies receiving a blood transfusion – a parent's guide.'
  - For the older child, provide information leaflet 'Will I need a Blood Transfusion?' - available via Trust Intranet.
- For the patient/parent/guardian who are not willing to consent to transfusion, such as Jehovah's Witnesses, adhere to the WHSCT Policy 'Treatment of Patient's who decline transfusion of Blood Components and/or Blood Products'[12].
- The beliefs of Jehovah's Witnesses and any other patients resistant to transfusion should be acknowledged and respected.
- Consent issues should not delay necessary transfusion in an emergency situation.
- In situations where it is not possible to obtain informed consent prior to the transfusion, e.g. emergency medical treatment in an unconscious patient, the patient or parent / guardian should be informed retrospectively of the clinical indication for and the associated risks and benefits of the transfusion.

11.0 Organising a request for a Blood Component for transfusion

Staff responsible for organising a request for a Blood Component for transfusion must have their knowledge on transfusion practice updated within the previous 18 months and successfully completed Competency 2 'Organising a request for a Blood Component for transfusion' within the last three years.

If you are interrupted or distracted at any stage during the checking procedure you should start again.

- For the older child, only one unit of blood should be removed at a time for each patient unless extremely rapid transfusion of large quantities of blood is required. For the child receiving a paedipack, more than one pack may be issued depending on the volume required.

- Prior to organising a request for a Blood Component for transfusion ensure that the: -
  - Wherever possible, the reason for the transfusion has been explained to the patient or parent/guardian.
  - Wherever possible, the patient has been informed about possible adverse effects of transfusion and the importance of reporting immediately any symptoms.
  - Blood component is ready for collection.
  - Blood component has been properly prescribed and the reason for the transfusion is recorded in the patient's case notes.
  - Patient has a patient identification wristband in situ.
  - Patient has baseline observations (temperature, pulse, respirations and blood pressure) taken and recorded. If these are not within normal limits for the patient, medical staff to be informed prior to requesting blood component.
  - Patient has patent venous access.
- Complete a Blood Collection Form (Appendix Five).
- Information required to be completed accurately and legibly (an addressograph can be used on the request form) on the Blood Collection Form : -
  - Unique Identification Number.
  - Patient's surname.
  - Patient's first name.
  - Date of Birth.
  - Gender.
  - Clinical Area.
  - Consultant.
  - Blood component required (indicating any special requirements) – this information should be taken from the Blood Component Prescription and Transfusion Record (Neonates and Paediatrics).
  - Details of individual completing the form (completed after the patient identification check has been undertaken).
- For the neonate / child unable to give an accurate and reliable response: -
  - The patient's first name, surname and date of birth and Unique Identification Number must be identical to those on the patient's identification wristband, case notes and the Blood Collection Form.
  - Where possible confirm patient identity with another member of staff and/or parent or patient's carer/relative who can verify patient identification
- For the older child, positive identification of the patient (who is capable of giving an accurate and reliable response) is essential before the Blood Collection Form is used and must be based on the following: -
  - Ask the patient for their first name, surname and date of birth.
  - Confirm that these details match those on the patient's identification wristband.
  - Confirm that the first name, surname, date of birth and Unique Identification Number on the patient's identification wristband corresponds with details on the Blood Collection Form.

- For the unidentified patient: -
  - The Unique Identification Number and gender are the minimum patient identifiers.
  - The Unique Identification Number and gender must be identical to those on the patient's identification wristband and the Blood Collection Form.
- Identify an appropriate member of staff to collect the blood component who has been trained and assessed as per 11.0.
- Ensure accurately completed Blood Collection Form delivered or brought to relevant area.
- Ensure the member of staff is aware of the exact location of the Blood Issue Fridge / Blood Bank where the blood component is being stored.
- Where a vacuum shute system is available and in the event of failure of the vacuum shute system and a blood component is required in an emergency situation: -
  - Phone Blood Bank (9a.m. to 5p.m. Monday to Friday; or bleep BMS on call out of hours).
  - Inform member of staff in Blood Bank of the patient identification details (first name, surname, date of birth and unique identification number), blood component required and clinical area.
  - Staff member (who has been trained and assessed as per 11.0) should be informed to collect blood component from the Blood Bank.
  - The completed Blood Collection Form should be forwarded to the Blood Bank when the vacuum shute system is back in operation and marked 'Already collected'.

12.0 Collection of Blood Components from the Blood Bank

For collection of Emergency Uncrossmatched O Rhesus D negative Red Cells (see page 13).

Staff responsible for collection of blood components must have completed training on 'Collection of Blood Components' within the last year and have successfully completed Competency 3 'Collecting a blood component for transfusion' within the last three years.

If you are interrupted or distracted at any stage during the procedure you should start again.

- The staff member removing the Blood Component must have an accurately completed Blood Collection Form:-
  - Patient identification details – first name, surname, date of birth, unique identification number.
  - Blood component to be collected.
  - Clinical area.
  - Details of individual who requested the collection.
- If there are multiple units for the same patient, the component that contains the Compatibility Report (Appendix Six) should be removed first.
- Select and remove the unit that has patient details on the compatibility tag attached to the blood component that fully match the patient details (first name, surname, date of birth and unique identification number) on the Blood Collection Form.

- Ensure correct component being removed as indicated on the Blood Collection Form.
- The patient details on the Blood Traceability Record (Appendix Seven) and Compatibility Report (available with the first unit being collected - subsequent units will only have the Blood Traceability Record) must also match the Blood Collection Form.
- When satisfied that the 'Right Blood' for the 'Right Patient' has been removed as detailed on the Blood Collection Form, record the following details on the Laboratory ledger:-
    - Last six digits of relevant unit number (BMS staff undertake this at Altnagelvin Blood Bank).
    - Date unit removed.
    - Time unit removed.
    - Initials of staff member removing unit.
- Print name and record date and time unit removed on the Blood Traceability Record.
- Place the Blood Traceability Record and Compatibility Report (if first unit) into the clear bag along with the blood component.
- This process must be repeated for each unit removed.
- Leave Blood Collection Form in relevant folder/location.
- Where blue blood transport bags are used (not used for Platelets), place the Unit in the blue blood transport bag and place a cool pack on top of the unit.
- If more than two units are required which are not Paedipacks, use the 4 or 6 unit boxes as appropriate. The blood transfer box should have the least air possible - i.e. fill all residual space with cool packs.
- Staff member will take immediately to the requesting correct clinical area and hand the blood component to a qualified member of staff (or in theatres to an appropriate member of staff).
- Qualified member of staff in clinical area confirms that correct component for correct patient is delivered against appropriate documentation.
- Complete relevant section 'Receipt of Unit in Clinical Area by:' on Blood Traceability Record – print name, date and time received.
- Blood components must never be left unattended.

12.1 **Additional information on Collection of Blood Components**

- Red cells are never stored in a ward or drugs refrigerator and must only be transported in boxes designed for the purpose.
- Only one adult unit should be removed for a patient at a time. (Exception may be for theatre patients or in an extreme emergency when a rapid transfusion is needed – in which case a validated transport box must be used.) In this situation, one Blood Collection Form would suffice that indicates the number of components required. For the child receiving a paedipack, more than one pack may be issued depending on the volume required.
- Altnagelvin - Monday to Friday (9a.m. to 5p.m.) excluding Bank Holidays, the Biomedical Scientists (BMS) informs the Porters that a blood component is required to be delivered to a clinical area. The BMS ensures the correct component is removed, the Porter completes 'Removal of Unit from Blood Bank' section of the Blood Traceability Record and the BMS completes relevant sections on the Blood Bank register.

13.0 Pre Transfusion Identification Checks

Staff responsible for preparing and administering a transfusion of a blood component must have had their knowledge on transfusion practice updated within the previous 18 months and successfully completed Competency 4 'Preparing and administering a transfusion of a blood component' within the last three years.

Note the compatibility form and patient's case notes must not be used in the pre transfusion patient identification checks

If you are interrupted or distracted at any stage during the checking procedure you must start again.

- Two qualified members of staff will perform the checks separately and independently and agree the result.
- The following check must be undertaken at the patient's bedside: -
  - Confirm that the blood component has not expired and that it will not expire during the transfusion episode (midnight of the expiry date if Red Cells or Platelets).
  - Check blood component for signs of discolouration, haemolysis, leaks or clumps.
- For the neonate / child unable to give an accurate and reliable response: -
  - The patient's first name, surname, date of birth and Unique Identification Number must be identical to those on the patient's identification wristband, case notes, the Blood Component Prescription and Transfusion Record (Neonates and Older Children) and the compatibility label attached to the unit pack.
  - Where possible confirm patient identity with another member of staff and/or parent or patient's carer/relative who can verify patient identification.
- For the older child, positive identification of the patient (who is capable of giving an accurate and reliable response) is essential and must be based on the following: -
  - Ask the patient for their first name, surname and date of birth.
  - Confirm that these details match those on the patient's identification wristband.
  - Confirm that the first name, surname, date of birth and Unique Identification Number on the patient's identification wristband corresponds with details on the Blood Component Prescription and Transfusion Record (Neonates and Older Children) and the compatibility label attached to the unit pack.
- For the unidentified patient: -
  - The Unique Identification Number and gender are the minimum patient identifiers.
  - The Unique Identification Number and gender must be identical to those on the patient's identification wristband, the Blood Component Prescription and Transfusion Record (Neonates and Older Children) and the compatibility label attached to the unit pack.

- Confirm that the blood group and unit number on the blood component label details, attached by the Transfusion Service, corresponds with the blood component compatibility label attached by the Blood Bank, the Compatibility Report and the Blood Traceability Report.
- All documentation (Blood Component Prescription and Transfusion Record (Neonates and Older Children), Compatibility Report and Blood Traceability Record) pertaining to the blood transfusion episode must match the patient and patient identification wristband before staff complete staff details, date and start times.
- Check any special requirements contained in the Blood Component Prescription and Transfusion Record (Neonates and Older Children) correspond with special requirements indicated on the blood component label attached by the Transfusion Service.
- The compatibility report form will be used as part of the Blood Component checking procedure (as this should include and specify any special requirements) and then completed with the following details - date, start time and signature of the two members of staff undertaking the check.
- Blood Traceability Record documentation should be completed (print name, date and time when transfusion commenced) and returned to Blood Bank as soon as possible after the commencement of the transfusion. Full traceability from vein to vein, donor to patient is required[3].
- If there are any discrepancies found during the course of the bedside check, the blood component should not be transfused and advice must be sought from the Blood Bank.
- If no discrepancies are found during the above procedures and baseline observations have been taken and recorded, the blood component can be erected. This must be done by one of the staff members involved in the above pre transfusion checking procedure.
- The compatibility report form must be readily available during the transfusion episode. When the transfusion of the component is completed the report must be kept in the patient's medical notes as a permanent record of the transfusion. This policy recommends that the compatibility report form is attached to the relevant section of the 'Blood Component Prescription and Transfusion Record (Neonates and Older Children).'

14.0 Observations during transfusion of a Blood Component

- This policy recommends the use of the 'Blood Component Prescription and Transfusion Record (Neonates and Older Children).'
- The following observations are the minimum acceptable standard to be undertaken and recorded for the transfusion of each blood component: -

- Pulse, blood pressure, temperature and respirations before the commencement of the transfusion.
- Pulse, blood pressure, temperature and respirations 15 minutes after the commencement of the transfusion.
- Pulse, blood pressure, temperature and respirations at the end of the transfusion.

- Further observations are at the discretion of the clinical area (dependent on clinical condition, level of consciousness, inability to communicate adverse effects).

- These observations must be repeated for each blood component transfused.
- Visual observation of the patient throughout the transfusion is essential (ensure call bell available if appropriate for patient).
- A doctor and/or qualified nurse is responsible for informing the patient/parent/guardian about possible adverse effects of transfusion and the importance of reporting immediately any adverse effects. Adverse effects include:
  - Pyrexia
  - Shivering
  - Rashes
  - Flushing
  - Shortness of breath
  - Tachycardia
  - Headache
  - Chest tightness
  - Hypotension
  - Anxiety/restlessness
  - Pain in the extremities or in the loin
  - Any other change to patient's condition since transfusion commenced.

15.0 Administration of a Blood Component

- If a Paedipack is used:
  - A Neonatal Syringe Set must be used when administering a Paedipack blood component (Appendix Eight).
  - The staff member drawing up the blood component from the Paedipack washes their hands by using an aseptic hand wash and applies non-sterile gloves (which is sufficient providing a non-touch technique is used).
  - Using a sterile paper towel to place the equipment, the blood component from the Paedipack is drawn up into the Neonatal Syringe Set.
  - The amount of blood component required is confirmed again with the amount prescribed on the Blood Component Prescription and Transfusion Record (Neonates and Older Children).
  - The syringe is placed in the syringe pump and the rate of the infusion is sent and checked.
  - The syringe is then attached to the patient's venous access and the transfusion is commenced.
- Red cells, Fresh Frozen Plasma (FFP) and Cryoprecipitate must be transfused through a sterile blood administration giving set (incorporates a mesh filter 170-200 micron pore size). A standard blood or platelet administration set must be used for the transfusion of platelet components. Platelets must not be transfused through giving sets that have been used for red cells or plasma components – a new giving set must be used.
- Prior to the commencement of the blood component transfusion EITHER – prime the blood administration set with an intravenous infusion of 0.9% Sodium Chloride (if this is required it must be prescribed by the doctor and be checked according to the Trust intravenous fluid policy) OR flush the venous access with 1 to 2mls of 0.9% Sodium Chloride.
- 0.9% Sodium Chloride is the only solution that should be infused through the blood administration set prior to the transfusion of a blood component.
- The start and finish times of the transfusion episode must be clearly recorded on the Blood Component Prescription and Transfusion Record (Neonates and Older Children).

- It is imperative that all paperwork pertaining to the transfusion episode is checked and completed accurately.
- Adverse reactions may manifest many hours after the transfusion is completed. Therefore, patients, such as day cases, discharged within 24 hours of a transfusion should be given the advice sheet 'Advice for patients who are discharged within 24 hours of a Blood Component Transfusion' (Appendix Nine).

15.1 Additional Information regarding Platelet Transfusion

- Platelets must never be stored in a refrigerator.
- Platelets are continually agitated whilst in Blood Bank (to prevent them aggregating) therefore on arrival at the clinical area they should be given as soon as possible.
- A sterile platelet administration giving set should be used. If this is not available a sterile blood administration giving set may be used, provided it has not previously been used for the administration of red cells.
- Maximum infusion time 30 minutes.

15.2 Additional Information regarding FFP & Cryoprecipitate Transfusion

- Take baseline coagulation screen (though may need to use components before results are available). For some small babies, such as those < 1Kg with pulmonary haemorrhage and no central venous access, it may be very difficult to obtain a sample and this should not delay treatment.
- Requires approximately 30 minutes thawing time in Blood Bank from request received in Blood Bank.
- Must be transfused through a sterile blood administration giving set (Neonatal Syringe Set if a Paedipack being used).
- Start infusion immediately upon arrival to the clinical area.
- Maximum infusion time 30 minutes.
- FFP - must be transfused within 4 hours of being thawed if stored at room temperature (can be kept for up to 24 hours in controlled temperature storage in Blood Bank).
- Cryoprecipitate – if delay of commencement unavoidable, must be stored at ambient temperature and transfused within 4 hours of being thawed.

16.0 Technical Aspects in the Administration of a Blood Component

- Ideally commence the transfusion of red cells within 30 minutes of removal from controlled cold chain storage and the unit must be completed within 4 hours of removal from controlled cold chain storage.
- If a transfusion of red cells has to be disconnected temporarily eg problem with venous access, the blood administration giving set may be connected to a second cannula (if insitu) provided use of an Aseptic Non Touch Technique (ANTT). Otherwise, a second cannula will be inserted and the blood administration giving set may be connected to this provided use of ANTT. The transfusion must be completed within 4 hours of removal from controlled cold chain storage. If this is not possible, the red cells remaining in the pack after the 4-hour period should be discarded as per section 19.0.
- There is extensive clinical experience of safely administering red cell units to stable patients over a period of 90 minutes for each unit[7]. In situations such

as massive haemorrhage where rapid red cell replacement is required a unit may be transfused in under 5 minutes using rapid infuser devices.

- Electronic infusion pumps may damage red blood cells, and must only be used for the administration of red blood cells if there is manufacturer verification that they are safe to use for this purpose. The administration set used must be suitable for the administration of blood components and is recommended for the type of infusion pump that is being used.
- There is no minimum or maximum size of cannula for transfusion. The size of the cannula chosen should depend on the size of the vein and the speed at which the blood component is to be transfused. For patients with short-term or indwelling multi-lumen central lines, these are usually suitable for the transfusion of blood components. Where possible, one lumen should be reserved for administering blood components[7].
- Red blood cells are not routinely warmed. Patients who will benefit from warmed blood include children receiving massive transfusion, infants requiring exchange transfusion and patients with clinically significant cold agglutinins[9]. Red blood cells must only be warmed using a specifically designed commercial device with a visible thermometer and audible warning.
- Red blood cells for transfusion must be stored in a validated designated alarmed blood fridge at a stable temperature 2-6^{o}C. Red blood cells throughout its transportation and storage should be maintained at 2-6^{o}C using validated “cool boxes” which are required to maintain the “cold chain”. If a unit of red blood cells has been out of temperature control for more than 30 minutes and there is no prospect of its imminent transfusion the unit must be returned to Blood Bank and Blood Bank informed of this.
- Drugs must not be added to blood components under any circumstance.
- A new giving set must be used:
  - After 12 hours of continuous transfusion in order to prevent bacterial growth.
  - If another infusion is to continue after the transfusion.

17.0 Completing the Transfusion of a Blood Component

- Undertake and record pulse, blood pressure, temperature and respirations at the end of the transfusion.
- Record the time of completion on the ‘Blood Component Prescription and Transfusion Record (Neonates and Older Children).’
- At the end of the transfusion, EITHER – prime the blood administration set with an intravenous infusion of 0.9% Sodium Chloride (if this is required it must be prescribed by the doctor and be checked according to the Trust intravenous fluid policy) OR flush the venous access with 1 to 2mls of 0.9% Sodium Chloride.
- If the transfusion is completed uneventfully, discard the empty blood component pack and administration set into an orange lid container in the clinical area.
- Only retain the empty pack if the patient has had a transfusion reaction or a suspected transfusion reaction or if the patient had any other adverse outcome – this will be sent back to Blood Bank (see 18.0).
- If the patient is for another unit, insert the blue plug to the port where the blood administration set was inserted on the blood component pack and

discard the empty blood component pack into an orange lid container in the clinical area.

- Where a blood component has been transfused partially, for reasons other than a suspected transfusion reaction, the blood component pack with the remaining contents and the giving set should be disposed as one unit into an orange lid container.
- Any unused blood component units must be returned to the Blood Bank as soon as possible.
- If the transfusion runs over its prescribed time the doctor must be informed.
- All paperwork involved (Blood Component Prescription and Transfusion Record (Neonates and Older Children) and Compatibility Report Form) must be filed in the patient's notes.

18.0 Managing and reporting of Adverse Reactions/Events (Appendix Ten)

- Children as well as adults may be affected by transfusion errors and may suffer from immunological transfusion reactions and may develop transfusion-transmitted infections. For these reasons, attention to the correct identification of the patient and component at all stages of the transfusion process is essential. Special care should be taken in patients who are unable to complain of symptoms that would raise suspicion of a developing transfusion reaction, because they are unconscious, too young, confused or there is a language barrier. More frequent observations may be required[9].
- Adverse blood reactions and events must be reported by law to the Medicines and Health Care Products Regulatory Agency (MHRA) – the reporting system is known as SABRE (Serious Adverse Blood Reactions and Events).
- Inform Blood Bank of adverse reactions/events.
- The Haemovigilance Practitioner will complete online reporting to SHOT/SABRE following discussion of adverse reactions/events with the Hospital Transfusion Team.
- If a transfusion reaction is suspected a member of the medical staff must be contacted immediately. The patient's temperature, pulse, blood pressure and respirations must be recorded.
- If a severe transfusion reaction is suspected:
  - The transfusion must be stopped and urgent medical advice obtained.
  - The blood administration set must be changed and venous access maintained using normal saline, running slowly to keep the vein open.
  - The reaction must be reported immediately to Blood Bank.
  - The unit and patient identification details must be re-checked to ensure that the patient is receiving the correct unit.
- Any blood component remaining in the pack and the administration set must be returned to the Blood Bank for testing. Blood and urine samples from the patient will be required by the laboratory.
- Complete and return the 'Investigation of Moderate or Severe Acute Transfusion Reactions Form' to Blood Bank at time of event (Appendix 11).
- A qualified nurse is responsible for ensuring that vital signs are monitored – a doctor must issue instructions on their frequency.
- The volume and colour of any urine passed must be recorded if possible.
- All adverse events related to blood transfusion must be reported to Blood Bank.

- If a severe reaction is suspected, medical advice from a Consultant Haematologist must be sought.

19.0 Record Keeping

- A permanent record of the blood components transfused must be kept in the patient case notes i.e. the Blood Component Prescription and Transfusion Record (Neonates and Older Children) with the compatibility report attached in the relevant section on the Record.
- A post transfusion note or repeat blood test to determine response to transfusion.
- Details regarding the occurrence and management of any adverse reaction/event.

20.0 Return of unused Units

Any unused Platelets, FFP or Cryoprecipitate must be returned to the relevant Blood Bank.

20.1 If a unit of Red Cells is returned within 30 minutes of time of removal:-

- Take unit of Red Cells back to the designated Blood Issue Fridge.
- On the Blood Traceability Record print name and record date and time when the unit of Red Cells has been returned to the Blood Issue Fridge.
- Complete the Blood Bank Register regarding the date, time and staff initials against the unit number of the unit being returned.

20.2 If a unit of Red Cells is being returned greater than 30 minutes of time of removal or any other Blood Component being returned – DO NOT PLACE INTO THE DESIGNATED BLOOD ISSUE FRIDGE:-

- Take Blood Component back to the Blood Bank.
- On the Blood Traceability Record in the section 'Unit not used in Clinical Area' – staff member in Blood Bank must Print Name and record date and time when the Blood Component was returned and complete box indicating that the unit was wasted.
- Staff member in Blood Bank completes the Blood Bank Register -
    - Date, time and initials against the unit number of the returned unit.

21.0 Receiving blood components transferred from another Hospital

Red cells received from another hospital must be taken to the Blood Bank immediately and handed directly to a member of staff. Biomedical Scientists (BMS) will determine the integrity of the units and if they can or cannot be used.

22.0 Transfer of Neonates from Southern Ireland to WHSCT

If the mother is transferred with the baby, both Mother and Infant should have pre-transfusion samples taken as per NPSA Competency 1 (Obtaining a venous blood sample for pre transfusion testing) with the H&C number used as the unique patient identifier. If no H&C number available, use hospital number and inform Blood Bank.

If the infant is transferred without the Mother, a Group & Coombs sample should be taken from the infant so that if blood is required, group specific blood could be issued.

23.0 Transferring red cells with a patient to another Hospital

Blood should only be transferred if anticipated to be used during transfer.

- If unused during the transfer, the red cells will most probably be discarded by the receiving Hospital unless the red cells are taken directly to the Blood Bank and the packaging has remained sealed.
- Ambulance personnel are not permitted to transfuse a patient.
- Blood components should only be transferred if there is a risk that the patient will require to be transfused in the ambulance or upon immediate arrival in the receiving hospital.
- As soon as a decision to send blood has been made Blood Bank should be contacted immediately.
- Inform Blood Bank staff regarding patient information, expected time of transfer and expected destination of patient
- Blood Bank staff will pack the red cells in a transport box with a seal attached and provide relevant paperwork in the pocket at the front of the box.
- Blood Bank staff will fax the Blood Bank at the receiving hospital and give patient and blood component details
- If the red cells are not required in transit do not break the seal on the transport box.
- If the red cells are required, the accompanying doctor/nurse (who has been trained and competently assessed as per the NPSA Safer Practice Notice ‘Right Patient, Right Blood’) must follow the proper blood administration procedure.
- On arrival at the receiving hospital, inform the clinical team that the unused red cells must be transferred to the Blood Bank as soon as possible.

24.0 Blood Products

- Blood products are any therapeutic product derived from human whole blood or plasma donations. As plasma from any single donor could introduce infectious agents into the batch, scrupulous attention is paid to testing for transmissible viruses and steps are taken to inactivate viruses during processing. However, no blood product can be guaranteed to be 'risk free'.
- Since Blood Products do not contain red cell antigens or significant red cell antibodies, compatibility is not an issue. All plasma derivatives are blood products and their administration, including all batch numbers and expiry dates, should be carefully documented.
- Blood Bank should be contacted in the event of any adverse reactions to blood products and the Clinical Area must report to the Yellow Card Scheme.
- When blood products are required from Blood Bank, a NI Hospital Transfusion Request Form must be completed with patient details and product request and then sent to Blood Bank.
- The rates of infusion, storage of the product, administration route and any necessary re-constitution of the product are to be found in the package insert.
- Observations for blood products are as for medicines, not as for Blood Components, and frequency of observations are dictated by medical staff and the patient's condition.

24.1 Immunoglobulins (IgG)

- Are the antibodies produced by B-lymphocytes in response to infection. Immunoglobulins are therefore important for the correct functioning of the immune system, fighting bacterial infections, neutralising viruses and activating the complement system.
- Are given when the patient fails to make adequate antibodies or as protection against particular infections. In other instances they are used to modify the way in which the patient's immune system is working, usually by 'blocking' the action of other harmful antibodies.
- NIBTS should be informed of all new patients requiring IgG.
- Are supplied by NIBTS on a named basis only.
- The doses used vary according to the indication. The weight and height of the patient must be recorded to assist the clinician in determining the dose required for the patient.
- Infusion rates are given in the product data sheets and it is important that these are not exceeded. The infusion is started slowly and gradually increased to a maximum infusion rate in the absence of any reactions.
- Must be prescribed on the Medicine Kardex.

25.0 Summary of Blood Components

Blood Component	Giving Set	Transfusion Time	Storage	Comments
Red Cells **(including Paedipacks)**	Blood Administration Giving Set. (Use Neonatal Syringe Set for Paedipacks) Change at least every 12 hours.	Commence within 30 minutes of removal from controlled temperature storage. Transfusion duration 2 - 3 hours. Must be completed within 4 hours from removal from controlled temperature storage.	4^{o} +/- 2^{o}C in an approved, alarmed blood storage fridge only (has controlled temperature monitoring).	Shelf life 35 days. If infusion pumps used, they must be used according to manufacturer's instructions. Minimum observations baseline, 15 minutes after commencement and at end of transfusion.
Platelets	Blood / Platelets Administration Giving Set. Do not use a Giving Set that has been previously used for red cells.	Transfusion duration 30 minutes. Use as soon as delivered to clinical area.	Stored at room temperature with constant agitation in Blood Bank. Never should be placed in a fridge.	Shelf life 5 days. If infusion pumps used, they must be used according to manufacturer's instructions. Minimum observations baseline, 15 minutes after commencement and at end of transfusion.
Fresh Frozen Plasma (FFP)	Blood Administration Giving Set.	Transfusion duration 30 minutes. Post thaw storage results in a decline in the content of labile coagulation factors.	Stored at < -25°C. Thawed FFP may be stored for 24hr in a temperature controlled fridge in Blood Bank, but must be transfused within 4 hrs if taken to clinical area.	Takes approximately 30 minutes to thaw in Blood Bank. Take coagulation sample before FFP is transfused. If infusion pumps used, they must be used according to manufacturer's instructions. Minimum observations baseline, 15 minutes after commencement and at end of transfusion.
Cryoprecipitate	Blood Administration Giving Set.	Transfusion duration 30 minutes.	Stored at < -25°C. When thawed must be stored at ambient temperature. Must be transfused within 4 hrs if taken to clinical area.	Takes approximately 30 minutes to thaw in Blood Bank. If infusion pumps used, they must be used according to manufacturer's instructions. Minimum observations baseline, 15 minutes after commencement and at end of transfusion.

26.0 Summary of Blood Products

Blood Product	Giving Set	Infusion Rate	Storage	Comments
Immunoglobulin	Standard intravenous infusion giving set	Infusion rates as per clinicians advise	Between 2°C and 8°C	Dose used depends on clinical condition, weight & height of patient Refer to product information leaflet regarding preparation Must be prescribed on the medicine kardex

27.0 Appendix List

Appendix One

Suggested Transfusion Thresholds for infants under 4 months

Red Cells	**Transfusion Threshold**
Top-up Transfusion	Volume 20ml/kg
Clinical Situation	Transfuse at:
Neonate receiving mechanical ventilation	Hb < 110 – 120g/L
Oxygen dependency	Hb < 80 - 100g/L
Late anaemia, stable patient	Hb < 70g/L
Acute blood loss	10% blood volume
Exchange transfusion	Double volume 170mls/kg
Platelets	**Transfusion Threshold**
Clinical Situation Otherwise well infants, including NAIT[1] if no evidence of bleeding & no family history of ICH	Platelet Count < 20 – 30 X 10^9/l
Concurrent coagulopathy, birth weight < 1kg in first week of life, previous major bleed, current minor bleed, planned surgery or exchange transfusion, platelet count falling & likely to fall below 30, NAIT if previous sibling affected with ICH[2].	Platelet Count < 50 X 10^9/l
Consider platelet transfusion if there is major bleeding & platelet count is falling rapidly	Platelet Count < 100 X 10^9/l
Fresh Frozen Plasma (FFP)	**Transfusion Threshold**
Clinical Situation The only indications for FFP in neonates recommended in BCSH[3] guidelines & supported by evidence are: DIC, Vitamin K dependent bleeding & inherited deficiencies of coagulation factors.	Volume 10 – 20ml/kg

[1]NAIT – Neonatal Alloimmune Thrombocytopenia
[2]ICH – Intracranial Haemorrhage
[3]BCSH – British Committee for Standards in Haematology

Reference Ranges for coagulation studies in premature infants

	Seguin et al.[4] (n = 52)	Andrew et al.[5] (n = 40-96)
	Mean (Range)	Mean (95% Range)
Gestational Age (wks)	27 (24-29)	33 (30-36)
PT (sec)	14.5 (11.7-21.6)	13 (10.6-16.2)
Adult mean PT	11.6- 12.1	12.4
PT ratio	1.2 (1-1.9)	1.05 (0.86-1.3)
APTT (sec)	69.5 (40.6-101*)	53.6 (27.5-79.4)
Adult mean APTT	30.5-32.5	33.5
APTT ratio	2.2 (1.3-3.3)	1.6 (0.8-2.37)
Fib (g/L)	1.35 (0.62-4.21)	2.43 (1.5-3.73)

[4]Seguin et al (1994) *Coagulation studies in very low birth weight infants.* American Journal of Perinatology, 11,1, 27 – 29.
[5]Andrew M et al (1988) *Development of the human coagulation system in the healthy premature infant*. Blood 72: 1651 - 1657.

*Six values more than 100 seconds recorded as 101 seconds.

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Appendix Two

Guidance on use of Fresh Frozen Plasma (FFP) & Cryoprecipitate (amended version of NITC, 2009)

Contact a clinical haematologist sooner rather than later if you have any concerns.

Definition of coagulopathy

Deficiency of one or more coagulation factors, evident as:

- Abnormal coagulation screen (PT, APTT > 1.5 X normal)
- Microvascular bleeding

Indications for FFP transfusion

Coagulopathy with bleeding

or

Coagulopathy prior to an invasive procedure, which carries a risk of haemorrhage.

Coagulopathy could be attributed to:

- Liver disease
- DIC
- Surgical / trauma induced bleeding

Indications for Cryoprecipitate transfusion

Plasma fibrinogen < 1g/L with bleeding

or

Plasma fibrinogen < 1g/L prior to an invasive procedure, which carries a risk of haemorrhage.

In massive blood loss anticipate requirement for:

- FFP if blood loss exceeds 1 blood volume
- Cryoprecipitate if blood loss exceeds 1.5 times blood volume

FFP transfusion:

1. Confirm criteria for transfusion
2. Request from Blood Bank 1 therapeutic dose for an adult, child or neonate - 12 - 15 ml / kg body weight

   [1 unit of FFP contains 300 ml - on average 4 units would provide one therapeutic dose for a 70kg adult]
3. Send a baseline coagulation screen to Haematology
4. Allow 30 minute thaw time for FFP
5. Transfuse through blood administration set within 4 hr of thawing
6. Check coagulation screen for response.

Cryoprecipitate transfusion:

1. Confirm criteria for transfusion
2. Give 1 therapeutic dose:
   - Adult: 2 pooled bags
   - Child or neonate: 5-10mls//kg body weight of single donor units

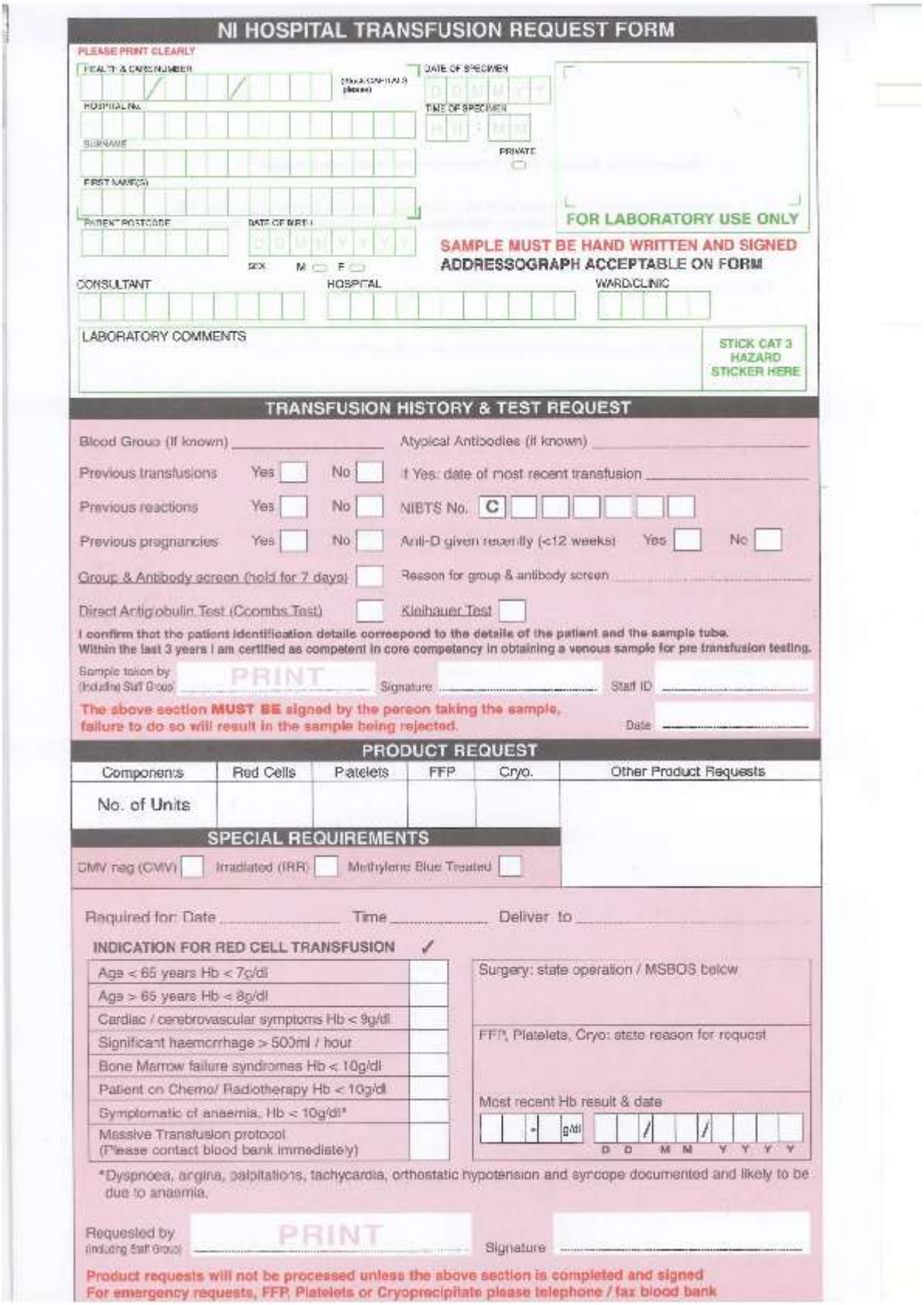
   [1 single donor unit contains 20-40 ml cryoprecipitate]
3. Check serum fibrinogen (coagulation screen) for response.

Aim to stop bleeding, rather than to normalise coagulation screen

FFP is NOT indicated in the following situations:

a) Reversal of warfarin induced coagulopathy in the absence of bleeding or when Prothrombin Complex Concentrate is available
b) Correction of coagulopathy in the absence of bleeding or anticipated peri-operative blood loss
c) Volume or plasma expansion in adults or children

Appendix Three



NI HOSPITAL TRANSFUSION REQUEST FORM

PLEASE PRINT CLEARLY

HEALTH & CARE NUMBER (Mandatory for NI patients please)

DATE OF SPECIMEN D D M M Y Y

HOSPITAL No.

TIME OF SPECIMEN H H : M M

SURNAME

PRIVATE

FIRST NAME(S)

PATIENT POSTCODE

DATE OF BIRTH D D M M Y Y Y Y

SEX M F

FOR LABORATORY USE ONLY

SAMPLE MUST BE HAND WRITTEN AND SIGNED
ADDRESSOGRAPH ACCEPTABLE ON FORM

CONSULTANT

HOSPITAL

WARD/CLINIC

LABORATORY COMMENTS

STICK CAT 3 HAZARD STICKER HERE

TRANSFUSION HISTORY & TEST REQUEST

Blood Group (If known) _____ Atypical Antibodies (if known) _____

Previous transfusions Yes ☐ No ☐ If Yes: date of most recent transfusion _____

Previous reactions Yes ☐ No ☐ NIBTS No. C ☐☐☐☐☐☐☐

Previous pregnancies Yes ☐ No ☐ Anti-D given recently (<12 weeks) Yes ☐ No ☐

Group & Antibody screen (hold for 7 days) ☐ Reason for group & antibody screen _____

Direct Antiglobulin Test (Coombs Test) ☐ Kleihauer Test ☐

I confirm that the patient identification details correspond to the details of the patient and the sample tube. Within the last 3 years I am certified as competent in core competency in obtaining a venous sample for pre transfusion testing.

Sample taken by (including Staff Group) PRINT Signature _____ Staff ID _____

The above section MUST BE signed by the person taking the sample, failure to do so will result in the sample being rejected. Date _____

PRODUCT REQUEST

Components	Red Cells	Platelets	FFP	Cryo.	Other Product Requests
No. of Units					

SPECIAL REQUIREMENTS

CMV neg (CMV) ☐ Irradiated (IRR) ☐ Methylene Blue Treated ☐

Required for: Date _____ Time _____ Deliver to _____

INDICATION FOR RED CELL TRANSFUSION ✓

Age < 65 years Hb < 7g/dl	
Age > 65 years Hb < 8g/dl	
Cardiac / cerebrovascular symptoms Hb < 9g/dl	
Significant haemorrhage > 500ml / hour	
Bone Marrow failure syndromes Hb < 10g/dl	
Patient on Chemo/ Radiotherapy Hb < 10g/dl	
Symptomatic of anaemia, Hb < 10g/dl*	
Massive Transfusion protocol (Please contact blood bank immediately)	

Surgery: state operation / MSBOS below

FFP, Platelets, Cryo: state reason for request

Most recent Hb result & date ☐☐.☐ g/dl ☐☐/☐☐/☐☐☐☐ D D M M Y Y Y Y

*Dyspnoea, angina, palpitations, tachycardia, orthostatic hypotension and syncope documented and likely to be due to anaemia.

Requested by (including Staff Group) PRINT Signature _____

Product requests will not be processed unless the above section is completed and signed
For emergency requests, FFP, Platelets or Cryoprecipitate please telephone / fax blood bank

Appendix Four

Indications for 'Special' Blood Components

The responsibility for ensuring that patient's with special requirements receive the appropriate blood components remains with the clinical staff making the request.

The Blood Bank laboratory system can store historic patient information relating to patients who require special requirements (which can act as a back-up system).

CMV-Antibody-Negative Components

Cytomegalovirus is a common herpes virus which causes chronic symptom-free infection in most adults, but may have more serious consequences for some specific patient groups[13].

SaBTO[14] has reviewed the evidence around the replacement of CMV seronegative cellular blood components (both red cells and platelets) with leucodepleted blood components. The DHSSPS have reviewed this advice and the following conclusions were reached:

1. CMV seronegative red cell and platelet components should be provided for intra-uterine transfusions and for any baby up to the chronological age of 20 weeks. (As the expected date of delivery is not known to the Blood Bank, this allows for the maximum period of prematurity, i.e. 16 weeks, plus four weeks neonatal period)[13]. All small sized blood packs and other cellular blood components intended for neonates should be provided as CMV seronegative[14].
2. CMV seronegative blood components should be provided where possible for pregnant women, regardless of their CMV serostatus, who require repeat elective transfusions during the course of pregnancy (not labour and delivery). This mainly applies to patients with haemoglobinopathies who are managed in specialist centres. However CMV seronegative blood components are not expected to be generally available in all hospitals and therefore for emergency transfusions in pregnant women, leucodepleted components are recommended[14].

Irradiated Blood Components

Transfusion-Associated Graft-Versus-Host Disease (TA-GvHD) is a very rare but usually fatal complication of transfusion of any blood component containing viable T lymphocytes when there is disparity in the histocompatibility antigens between donor and recipient[17].

Indications for Irradiated Components[15]:-

1. All donations from first- or second-degree relatives should be irradiated, even if the patient is immunocompetent.
2. All human leucocyte antigen (HLA)-selected components should be irradiated, even if the patient is immunocompetent.
3. All blood for intrauterine transfusion (IUT) should be irradiated. It is essential to irradiate blood for neonatal exchange transfusion (ET) if there has been a previous IUT or if the donation comes from a first- or second-degree relative. For other neonatal ET cases, irradiation is recommended provided this does not unduly delay transfusion. For IUT and ET, blood should be transfused within 24 hours of irradiation and, in any case, by 5 days or less from collection.
4. Platelets transfused in utero to treat alloimmune thrombocytopenia should be irradiated and any subsequent red cell or platelet transfusions irradiated until 6 months after the expected date of delivery (40 weeks gestation). There is no need to irradiate other platelet transfusions for pre-term or term infants, unless they have been donated by first- or second-degree relatives.
5. All severe T lymphocyte immunodeficiency syndromes should be considered as indications for irradiation of cellular blood components. Once a diagnosis of immunodeficiency has been suspected, irradiated components should be given while further diagnostic tests are being undertaken. A clinical immunologist should be consulted for advice in cases where there is uncertainty.
6. All recipients of allogeneic haemopoietic stem cell transplantation (SCT) must receive irradiated blood components from the time of initiation of conditioning chemoradiotherapy. This should be continued while the patient continues to receive graft-versus-host disease (GvHD) prophylaxis, i.e. usually for 6 months post-transplant, or until lymphocytes are >1 · 109/l. If chronic GvHD is present or if continued immunosuppressive treatment is required, irradiated blood components should be given indefinitely. Allogeneic blood transfused to bone marrow and peripheral blood stem cell donors 7 d prior to or during the harvest should also be irradiated.
7. Patients undergoing bone marrow or peripheral blood stem cell ‘harvesting’ for future autologous re-infusion should receive irradiated cellular blood components during and for 7 days before the bone marrow/stem cell harvest to prevent the collection of viable allogeneic T lymphocytes which can potentially withstand cryopreservation.

8. All patients undergoing autologous bone marrow transplant or peripheral blood stem cell transplant should receive irradiated cellular blood components from initiation of conditioning chemo/radiotherapy until 3 months post-transplant (6 months if total body irradiation was used in conditioning).
9. All adults and children with Hodgkin lymphoma at any stage of the disease should have irradiated red cells and platelets for life.
10. Patients treated with purine analogue drugs (fludarabine, cladribine and deoxycoformicin) should receive irradiated blood components indefinitely. The situation with other purine antagonists and new and related agents, such as bendamustine and clofarabine, is unclear, but use of irradiated blood components is recommended as these agents have a similar mode of action. Irradiated blood components should be used after alemtuzumab (anti-CD52) therapy. Their use after rituximab (anti-CD20) is not recommended at this time. As new potent immunosupressive drugs and biological agents are introduced into practice there is a need for regular review of these recommendations.
11. In view of the recent switch from horse anti-thymocyte globulin (ATG) to the more immunosuppressive rabbit ATG, we now recommend use of irradiated blood components for aplastic anaemia patients receiving immunosuppressive therapy with ATG (and/or alemtuzumab). We cannot make a firm recommendation as to how long irradiated components should continue to be used after ATG administration.

<u>It is not necessary / there is no indication for routine irradiation for the following</u>[15]:-

1. Routine ‘top-up’ transfusions of premature or term infants unless either there has been a previous IUT, in which case irradiated components should be administered until 6 months after the expected delivery date (40 weeks gestation), or the donation has come from a first- or second-degree relative.
2. Infants or children who are suffering from a common viral infection, who are human immunodeficiency virus (HIV) antibody positive, or who have acquired immunodeficiency syndrome (AIDS). However, this should be kept under review. There is also no indication for routine irradiation of cellular blood components for adults who are HIV antibody positive or who have AIDS.
3. Infants undergoing cardiac surgery unless clinical or laboratory features suggest a coexisting T lymphocyte immunodeficiency syndrome.
4. Adults or children with acute leukaemia, except for HLA-selected platelets or donations from first- or second-degree relatives.
5. Patients undergoing routine surgery, those with solid tumours, HIV infection, autoimmune diseases or after solid organ transplantation (unless alemtuzumab (anti-CD52) has been used in the conditioning regimen). The effects of new regimens of chemo- and immunotherapy entering clinical practice must continue to be monitored.

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Appendix Five - Blood Collection Form

WESTERN HEALTH & SOCIAL CARE TRUST
BLOOD COLLECTION FORM (Northern Sector)

Please complete a Blood Collection Form for every Blood Component/Product required (other than Emergency O Negative Blood)

Patient Details: (If using addressograph label, please indicate clinical area)

Unique Identification Number:
First Name & Surname:
Date of Birth:
Gender:
Clinical Area:
Consultant:

Blood Component/Product Required:
(Please tick relevant box)

		Irradiated	CMV Negative
Red Cells	☐	Y/N	Y/N
Platelets	☐	Y/N	Y/N
Fresh Frozen Plasma	☐		
Cryoprecipitate	☐		
Other (specify)	_____		

Blood Collection Form completed by:

1) I confirm that the patient identification details correspond to the details of the patient and the patient identification wristband.
2) Within the last 3 years I have been certified as competent in 'Organising a request for a Blood Component for Transfusion'

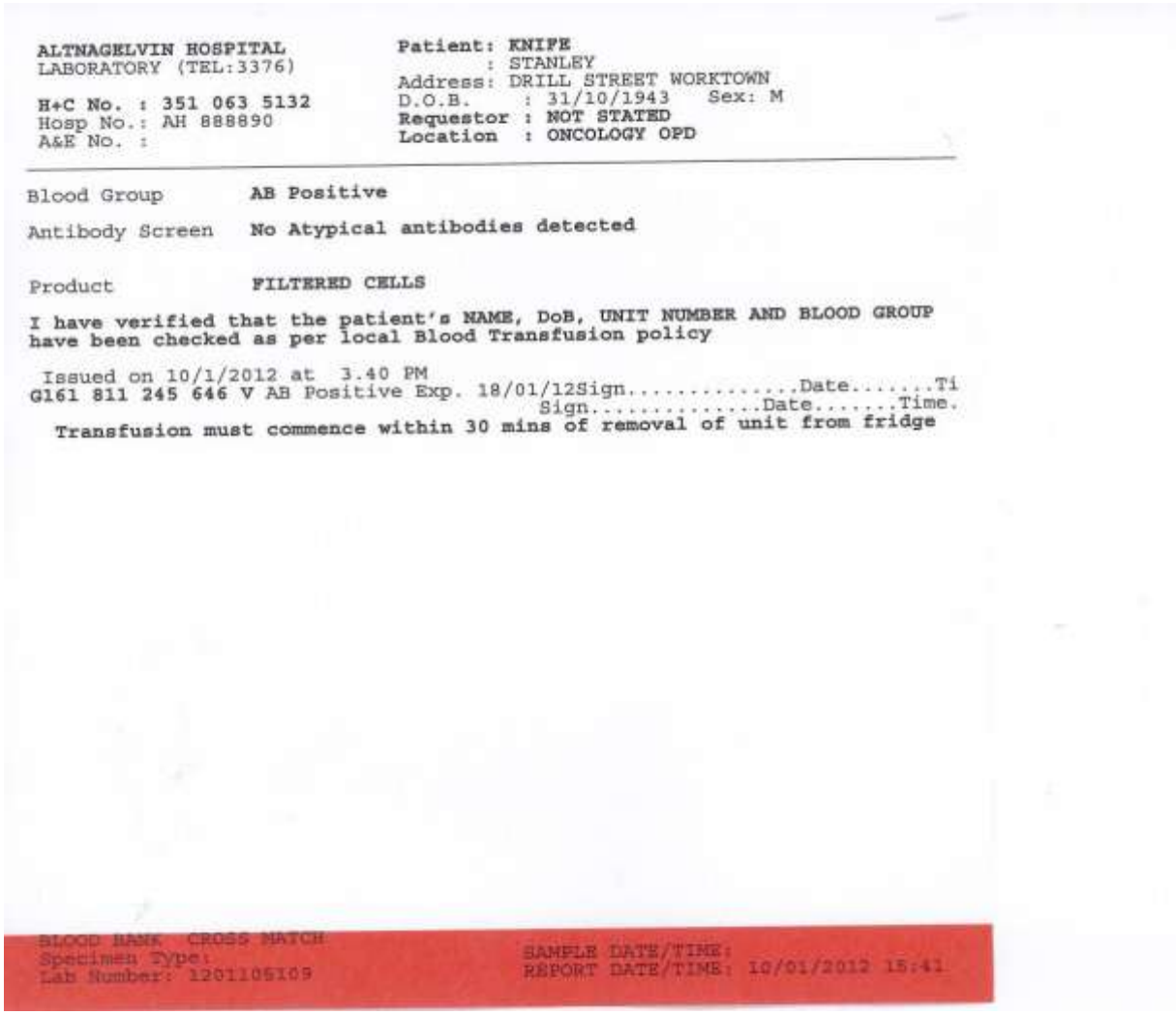
Name:(PRINT) _____
Position: _____
Signature: _____
Clinical Area: _____
Date: _____
Time: _____

9am - 5pm send in vacuum system to Blood Bank, **code 870,** then follow up phone call to Blood Bank

Out of Hours send in vacuum system to Post Room, **code 120**, then follow up phone call to Porters

Waterside Hospital send to Blood Bank with pretransfusion sample or with Driver. Ensure follow up phone call to Blood Bank

Appendix Six – Compatibility Report



ALTNAGELVIN HOSPITAL
LABORATORY (TEL:3376)

H+C No. : 351 063 5132
Hosp No.: AH 888890
A&E No. :

Patient: KNIFE
: STANLEY
Address: DRILL STREET WORKTOWN
D.O.B. : 31/10/1943 Sex: M
Requestor : NOT STATED
Location : ONCOLOGY OPD

Blood Group AB Positive

Antibody Screen No Atypical antibodies detected

Product FILTERED CELLS

I have verified that the patient's NAME, DoB, UNIT NUMBER AND BLOOD GROUP have been checked as per local Blood Transfusion policy

Issued on 10/1/2012 at 3.40 PM
G161 811 245 646 V AB Positive Exp. 18/01/12Sign.....Date.....Ti
Sign.....Date.....Time.
Transfusion must commence within 30 mins of removal of unit from fridge

BLOOD BANK CROSS MATCH
Specimen Type:
Lab Number: 1201106109

SAMPLE DATE/TIME:
REPORT DATE/TIME: 10/01/2012 15:41

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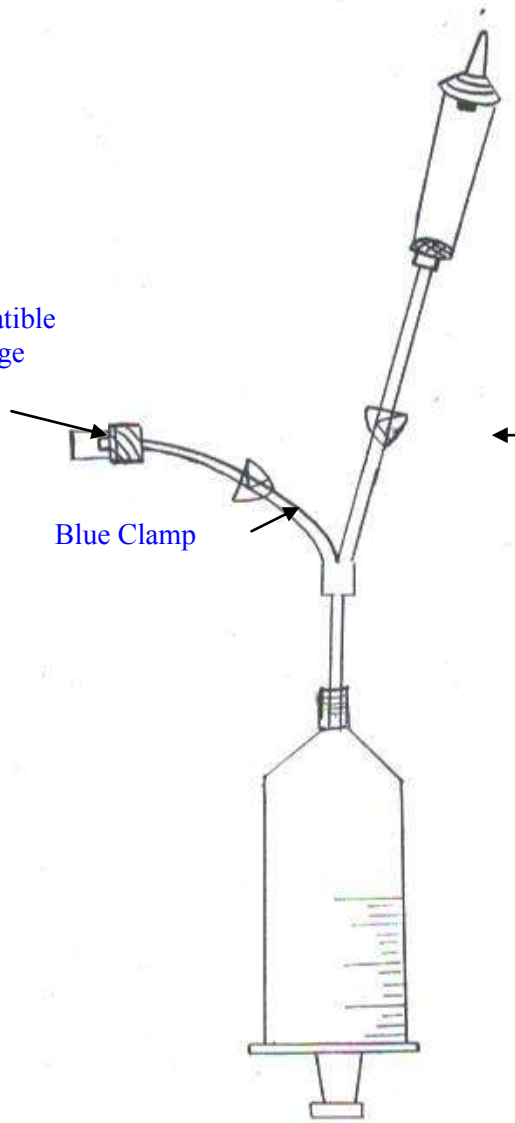
Appendix Seven – Blood Traceability Record

WESTERN HEALTH & SOCIAL CARE TRUST - BLOOD TRACEABILITY RECORD		
Unit Number:	This Record must be returned to Blood Bank upon commencement of the transfusion. A transfusion of a unit of Red Cells must be completed within 4 hours of time unit removed from Controlled Temperature Storage. A unit of Red Cells must not be put back into a Blood Fridge if out longer than 30 minutes.	
Patient Details Unique Identification Number: First Name: Surname: Date of Birth: Gender: Clinical Area:		
REMOVAL OF UNIT FROM BLOOD BANK	**DATE**	**TIME**
Within the last 3 years I have been certified as competent in 'Collecting a blood component for transfusion'		
Staff Name (PRINT CLEARLY):		
RECEIPT OF UNIT IN CLINICAL AREA	**DATE**	**TIME**
Staff Name (PRINT CLEARLY):		
COMMENCEMENT OF TRANSFUSION	**DATE**	**TIME**
Within the last 3 years I have been certified as competent in 'Preparing and administering a transfusion of a blood component'		
Staff Name (PRINT CLEARLY):		
Staff Name (PRINT CLEARLY):		
UNIT NOT USED IN CLINICAL AREA	**DATE**	**TIME**
Within 30 minutes, placed into blood fridge by (PRINT CLEARLY):		
Not within 30 minutes, Accepted into Blood Bank by (PRINT CLEARLY):		
Unit returned to stock ☐ Unit wasted ☐		

Appendix Eight

NEONATAL SYRINGE SET

(for use with Paedipacks)



(Manufactured by Kimal Ltd)

This set complies with the BCSH – Transfusion Guidelines for Neonates – Br. J. Haematology Vol 124 Issue 4 Page 433 paragraph 1.1.6

Quest BIOMEDICAL

The Exchange ♦Haslucks Green Road ♦Shirley ♦Solihull ♦ West Midlands ♦B90 2EL
Tel: 0121 744 7674 ♦ Fax: 0121 744 0775 www

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KIMAL

DIRECTIONS FOR USE

Neonatal Syringe Set

BR/QUEST/1292/1

1- Remove the set from the packaging.
2- CLOSE the RED and BLUE clamps.
3- Remove the plastic cover from the spike.
4- Insert the spike into the port of the Paediatric Blood pack.
5- OPEN the RED clamp.
6- Draw blood SLOWLY through the filter chamber into the syringe to avoid frothing. Expel any air back up the line towards the filter chamber by depressing the syringe plunger.
7- CLOSE the RED clamp.
8- Attach a suitable transfusion line (with a female luer connector) to the male luer on the side arm of the set.
9- OPEN the BLUE clamp.
10- Expel all the air in the transfusion line by depressing the syringe plunger before connecting to the patient.

Kimal Plc
Arundel Road
Uxbridge
Middlesex
UB8 2SA
England

5516/ 02

CE 0088

Kimal plc, Sherwood Road, Aston Fields, Bromsgrove, Worcs. B60 3DR, England. Telephone: +44 (0) 1527 573300 Fax: +44 (0) 1527 579536
Website: www.kimal.co.uk. VAT Registration: GB 531 1328 80

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Appendix Nine – **Advice Sheet for Patients who are discharged within 24 hours of a Blood Component Transfusion**

Patient Name: Address: ATTACH ADDRESSOGRAPH Date of Birth: Unique Identification Number: Gender:	Date: Ward: Consultant:

Advice for Patients following a Blood Component Transfusion

The majority of blood component transfusions take place without problems but having a transfusion carries with it a very small risk of developing side effects. These may develop within several hours, or in some cases may happen days or weeks later. These side effects are often mild, but it is still important to report any unusual or unexpected symptoms to a Doctor, Nurse or Midwife.

Please contact the hospital for advice if you experience any of the following after having a blood component transfusion:

- A high temperature – feeling feverish, hot and clammy
- Shivering or 'cold chills'
- Breathing problems
- Extreme tiredness
- Passing blood in your urine
- Passing much less, or very dark, urine
- Itchy skin rash
- Pain in the lower back (loin pain)
- Unexpected or unexplained bruising
- Jaundice (yellow colour of the white of your eyes or your skin)

When contacting the hospital for advice, please inform the hospital staff that you have recently had a blood component transfusion.

This section must be completed by staff if the patient is discharged within 24 hours of receiving a transfusion. Explain to the patient how to obtain assistance in the event of a problem (both 'in hours' and 'out of hours'), and then give this form to the patient before they leave the Ward/Department.

Ward/Department:.....

Contact numbers:
Monday to Friday (9am – 5pm):.....

Monday to Friday (after 5pm), Weekends & Bank Holidays.....

Date and Time of last transfusion: .....

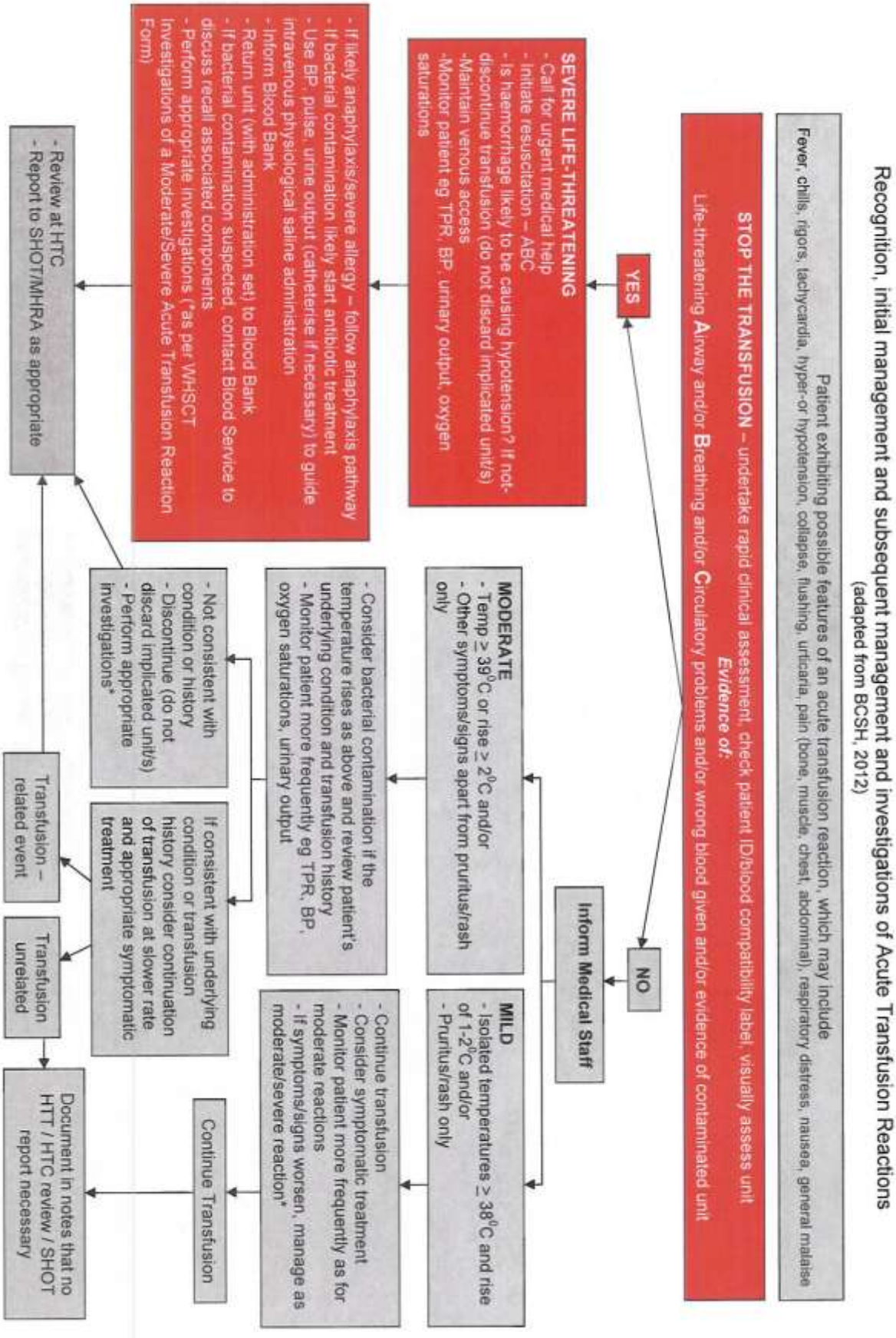
Blood Components transfused: .....

If you are unable to make contact with the hospital where you had your Transfusion, then please contact your GP as soon as possible.

In the rare event of an emergency (life threatening problems, for example difficulty with breathing), call 999 for an ambulance and bring this leaflet into hospital with you.

If you would like further information or advice about this, or other aspects of blood component transfusion, please discuss this with your Hospital Doctor, Nurse or Midwife.

Appendix 10 – Recognition, initial management and subsequent management and investigations of Acute Transfusion Reactions[16]



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Appendix 11

Investigation of Moderate or Severe Acute Transfusion Reactions

Altnagelvin/Tyrone County - contact Altnagelvin Blood Bank 213829/213830;
SWAH - contact SWAH Blood Bank 252421/252290

1. **Please complete the following details: -**

Unique Identification Number	
Surname	
First Name	
Date of Birth	
Gender	
Ward	
Consultant	
Date of Event	
Time of Event	

2. ***Please forward the following to the Laboratory department: -**

- Donor pack causing reaction complete with blood administration giving set (in sealed plastic bag) – *Blood Bank*
- Group & Screen (Post transfusion) – *Blood Bank*
- Full Blood Count – *Haematology*
- Liver Function Test – *Biochemistry*
- Urea & Electrolytes – *Biochemistry*
- Urine for haemolysis (First MSSU post reaction) – *Microbiology*
- Blood Cultures – *Microbiology*
- Coagulation Screen - *Haematology*

3. **Medical Staff responsible for the patient to complete the following: -**

PATIENT HISTORY	
Previous Transfusion	Yes/No
Reason for Current Transfusion	
Pretransfusion Haemoglobin	
If Female Patient, Pregnancy History	Yes/No
If 'Yes' Number of Pregnancies	
Previous Abortion	Yes/No
Previous Miscarriages	Yes/No
Atypical Antibodies	Yes/No
Previous Transfusion Reactions	Yes/No

PLEASE TURN OVER AND COMPLETE SECOND PAGE.

Symptoms of Reaction (adapted from BCSH, 2012)	Yes	No	If 'Yes' additional investigations required as well as those indicated on Page 1*
Fever (≥ 2^{O}C above baseline or ≥ 39^{O}C) and/or chills, rigors, myalgia, nausea or vomiting and/or loin pain			N/A
Mucosal swelling (angiooedema)			Measure IgA level (yellow top EDTA sample tube) – if < 0.07g/L, & not generalised hypogammaglobulinaemia, perform confirmatory test with sensitive method and check for IgA antibodies.
Dyspnoea, wheeze or features of anaphylaxis			- Check oxygen saturation or blood gases. - Chest xray (mandatory if symptoms severe). - If severe/moderate allergy suspected, measure Serum Immunoglobulins (? IgA deficiency). - If severe allergy/anaphylaxis suspected, consider measurement of serial Mast Cell Tryptase (yellow top serum sample tube) - immediate, 3hrs & 24 hrs.
Hypotension (isolated fall systolic of ≥ 30mm resulting in level ≤ 80mm)			- Investigate as for fever. - If allergy suspected measure Serum Immunoglobulins (? IgA deficiency). - If severe allergy / anaphylaxis consider measurement of serial mast cell tryptase as above.

- **Blood Pack Unit associated with reaction**

TRANSFUSION HISTORY	
Blood Group	
Rhesus D Group	
Unit Number	
Expiry Date	
Date unit taken from Blood Bank	
Time unit taken from Blood Bank	
Time transfusion commenced	
Time transfusion discontinued	
Number of units already transfused during this admission	
Unit number of all other packs transfused during this admission	
Anything injected into the blood component pack or giving set?	Yes/No
Approximate volume of blood transfused	_____ mls

Signature **Designation**

Print Name **GMC/Staff Number**

Date **Time**

PLEASE ENSURE THAT BOTH PAGES ARE COMPLETED.

28.0 References

1. Serious Hazards of Transfusion (SHOT) scheme (1996-2011) *SHOT Annual Reports* 1996 – 2011. SHOT Office, Manchester. http://www.shotuk.org/home/
2. Health Service Circular HSS(MD) 17/2011 *Better Blood Transfusion 3 Northern Ireland*. DoH (BBT3)
3. Blood Safety and Quality Regulations (BSQR) 2005: *Statutory Instrument 2005/50.* http://www.legislation.gov.uk/uksi/2005/50/pdfs/uksi_20050050_en.pdf
4. National Patient Safety Agency (2006) *Safer Practice Notice 14: Right patient, Right Blood*. October 2006, NPSA/2006/14.
5. Northern Ireland Regional Blood Transfusion Policy (2011).
6. WHSCT Patient Identification Wristband Policy (2008).
7. McClelland, DBL (ed) (2007) *Handbook of Transfusion Medicine* (4th edition). The Stationery Office, London.
8. WHSCT Emergency Blood Management Plan for Shortages of Red Cells and Platelets (2012).
9. British Committee for Standards in Haematology (BCSH) (2009) *Guideline on the Administration of Blood Components* http://www.bcshguidelines.com/documents/Admin_blood_components_bcsh_05012010.pdf
10. Health Service Letter HSS (MD) 13/2012 *Use of Imported Fresh Frozen Plasma (FFP) to treat those born on or after 1st January 1996 and adult patients with Thrombotic Thrombocytopenic Purpura (TTP)*. DHSSPS.
11. British Committee for Standards in Haematology (BCSH) (2004) *Transfusion guidelines for neonates and older children*. British Journal of Haematology, 124, 433 - 453.
12. WHSCT Treatment of Patients who decline transfusion of Blood Components and/or Blood Products Policy (2008).
13. Health Service Letter HSS (MD) 45/2012 *Cytomegalovirus Tested Blood Components*. DHSSPS.
14. SaBTO Advisory Committee on the Safety of Blood, Tissues and Organs. *Cytomegalovirus Tested Blood Components* – Position Statement (2012).
15. British Committee for Standards in Haematology (BCSH) (2010) Guidelines on the use of irradiated blood components prepared by the British Committee for Standards in haematology blood transfusion task force. British Journal of Haematology, 152, 35 – 51.
16. British Committee for Standards in Haematology (BCSH) (2012) *Guideline on the investigation and management of acute transfusion reactions*. http://www.bcshguidelines.com/documents/ATR_final_version_to_pdf.pdf.