

## BLOOD ADMINISTRATION PROTOCOL

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## **BLOOD ADMINISTRATION PROTOCOL**

**Birmingham Children's Hospital**  
**February 2011**

### **BACKGROUND TO THIS PROTOCOL**

This Blood Administration Protocol has been written on behalf of Birmingham Children's Hospital NHS Trust by the hospital's transfusion team with contributions from the hospital's Transfusion Committee.

This protocol is applicable to everyone involved in the collection, storage and administration of blood products at Birmingham Children's Hospital.

Recommendations contained within the protocol are based on a number of transfusion guideline documents published in the last 10 years incorporating blood transfusion practice in neonates and children. In addition the NHS Executive Circular (HSC2007/001), Better Blood Transfusion 3, is applicable to children as well as adults. A list of these documents may be obtained from the Chairman of the Hospital Transfusion Committee (HTC).

The original document was written in 2001 (v1) and updated in 2003 (v2), 2006 (v3) and 2008 (v4). The present protocol incorporates national changes in blood transfusion policies which have occurred since 2008 as well as various recently published practice guidelines. Comments and suggestions made by hospital staff following the last update have also been addressed in this protocol.

### **Duties**

#### **Chief Medical Officer**

The CMO will ensure that the clinicians working within the organization are able to appropriately administer blood and blood products in accordance with this protocol.

#### **Clinical Leads**

Clinical Directors or Clinical Leads should ensure that staff within their specialties are aware of and comply with the requirements of this protocol.

#### **Consultants**

The Consultant is responsible for ensuring that their patients are receiving appropriate care and that blood and blood products are administered in accordance with this protocol.

#### **Hospital Transfusion Team (HTT)**

Chair of Hospital Transfusion Committee  
Clinical Lead for Blood Transfusion  
Blood Transfusion Department Manager  
Hospital's Specialist Blood Transfusion Practitioner

### **Hospital Transfusion Committee**

The HTC comprises the HTT plus clinical leads and /or lead nursing staff for all clinical specialties involved in the blood transfusion process. There is external representation from National Health Service Blood and Transplant (NHSBT – formerly the National Blood Service).

### **Clinical Risk & Quality Assurance Committee**

#### **All other staff**

It is the responsibility of all staff to comply with the protocol. If there are failures to comply with the protocol these should be reported by way of the Trust's Incident Reporting System.

The Chair of the HTC will provide a report to the CRQAC on transfusion-related issues every three months.

### **Method for development**

Communication with hospital staff following the last update, led to comments and suggestions which have been addressed in this protocol.

The protocol has been reviewed and amended by the HTT and endorsed by the HTC.

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## REFERENCES

The following are evidence based guidelines from the British Committee for Standards in Haematology.

- Transfusion guidelines for neonates and older children. B J Haem 2004 ;124(4): 433-53
- Guideline for use of platelet transfusion. B J Haem 2003; 122(1): 10-23
- Guidelines for the use of fresh-frozen plasma, cryoprecipitate and cryosupernatant, Brit J Haematol 2004,126,11-28
- Guidelines for transfusion for massive blood loss Clinical and Laboratory Haematology 1998; 10, 265-273
- Guideline on the Administration of Blood Components. B J Haem 2009
- BCH NHS Foundation Trust (2010) "Policy for the Development & Use of Competency Documentation."
- McClelland, DBL (ed) (2007) "Handbook of Transfusion Medicine" (4<sup>th</sup> edition) The Stationary Office: London.
- Royal College of Nursing (2004) "Right Blood, Right Patient, Right Time" Royal College of Nursing: London.

Procedural Document for Electronic Management (to include viewing and requesting) of Investigations from the Paediatric Laboratories 2009. (ICE requesting and reporting)

## Introduction

This protocol describes protocols for the collection of blood samples for blood grouping and cross-matching, and for the collection, storage and administration of blood and blood products. It also contains protocols for the investigation and treatment of adverse transfusion reactions and describes guidelines for the use of specialised blood products.

The aim of the protocol is to ensure the highest standards of safety for patients receiving blood transfusion by providing a consistent and standardised approach to the collection, storage and administration of blood products at Birmingham Children's Hospital.

## Blood Safety and Quality Regulations 2005

The Blood Safety and Quality Regulations became law in the UK on the 8<sup>th</sup> of November 2005. These regulations set standards for quality and safety, covering collection, testing, processing, blood storage and distribution of blood in trust Blood Transfusion Departments and in blood institutions (NHSBT). The three key areas within the regulations which impact BCH are:

- The trust must have complete audit trails for all individual units of blood and this information must be retained for 30 years. Information is therefore required on the fate of each unit of blood crossmatched, i.e. whether transfused, and to which patient, or whether the unit was wasted etc.
- Serious adverse events are reported to external bodies. This has previously been to the SHOT organisation and although this will continue, some adverse events will now be reported to the MHRA via an electronic reporting system known as SABRE.
- Training requirements – See Section 16

The Trust must be fully compliant with these regulations and will be monitored by the MHRA for compliance. Non compliances may result in fines or criminal charges.

## Purpose

It is well known that errors may occur in blood transfusion practices which can result in serious morbidity and in mortality for the recipient of the transfusion. The majority of errors occur outside of the laboratory and include incorrect sampling from a patient, the collection of the wrong unit of blood for a particular patient and the transfusion of inappropriate blood: such errors are reported to the government appointed body which is responsible for monitoring blood transfusion, namely the Medicines and Healthcare Products Regulatory Agency (MHRA). Additionally, the BCH voluntarily participates in the annual Serious Hazards of Transfusion (SHOT) scheme. This Blood Administration Protocol provides a standardised approach to blood transfusion in the Trust so that the potential for error in transfusion practices is minimised.

## **Blood Transfusion at BCH**

The hospital Blood Transfusion Department is located in the Haematology Laboratory, first floor of the Pathology Laboratory Block. It comprises a laboratory (phone 9874) and an issue room: blood for collection is located in the blood fridge in the issue room, which also is the collection point for platelets, fresh frozen plasma and cryoprecipitate. Access to the Haematology Department is by swipe card and there is out of hours cover on site for the Blood Transfusion Department by an on-call Biomedical Scientist.

Satellite blood fridges are located on PICU, Ward 15, in Main Theatre, Burns Theatres, Theatre 8 and the Emergency Department (ED): these are locked if accessible to the public and alarmed both centrally and locally.

A unit of O (Rh) negative blood for emergency use is stored in each of the ED blood fridge, the PICU blood fridge and the Main Theatre and R Block Operating Theatre fridges. Advice is always available for blood transfusion problems from the on-call Consultant Haematologists at BCH.

## **Blood Product Traceability**

- It is a legal requirement that a record is maintained of the transport, storage and transfusion of all blood products and that this record is complete and retained for a minimum of thirty years.
- It is essential that movement of blood products is fully recorded with date and time of removal and/or placement in a blood fridge. Failure to record movements and storage of blood products will result in the removal and disposal of units, possibly causing delay to transfusion and wastage of expensive blood products.
- The Blood Transfusion Department must be informed of any blood transfusion which has taken place.
- All blood compatibility labels (tags) must be returned to the Blood Transfusion Laboratory as soon as possible, after the transfusion is complete. Failure to inform the Blood Transfusion Laboratory of a transfusion will result in an incomplete record of transfusion, which is a failure to meet legal requirements.
- Any part of the blood traceability chain which is incomplete will result in time consuming follow up and failure to comply with completing these records may result in disciplinary measures.

**1. Requesting blood for transfusion.**

Blood may be requested by any staff who have received appropriate training and competency assessment. (See training requirements)

The request must be made on the hospital's Blood Product Request Form

**All sections of this form must be completed and the name and contact details of the requester clearly identified.**

Pre-printed patient identification labels (addressograph labels) can be used on the request form.

Appropriately trained and approved requesters may use the hospital's electronic request (ICE)

Patient details should be taken directly from the medical notes and not from secondary sources (e.g. ICE)

**Any requests which are illegible will not be processed.**

Patient diagnosis, reason for transfusion and relevant transfusion history must be stated.

**The urgency with which blood is required must be stated.**

For urgent and out of hours requests, the Blood Transfusion Department/on call BMS must be informed. The request may be made by telephone if urgent, but a blood request form should always be completed and sent to Blood Transfusion Department with the patient's cross match sample.

Order blood in mls, rather than in units. There are a number of formulae, which may be used in calculating the volume of blood required for a top up transfusion. A commonly used formula for determining the volume of packed cells for a standard top up transfusion is:

**[Desired Hb (g/dl) – Actual Hb] x Weight (kg) x (4) = required mls. of packed cells**



## 2. Collection of sample for blood grouping, antibody screening and cross matching

The procedure for taking blood samples for blood grouping and cross-matching is deliberately and necessarily proscriptive: it must always be adhered to. In this way, neither the mislabelling of samples with incorrect patient information nor the mis-sampling of patients will occur, avoiding the potential for incompatible blood being cross matched. If a significant error is made at this stage of the cross match procedure it may not be detected at a later stage.

- a) Doctors, nurses and phlebotomists who have had appropriate training may take the required blood sample from the patient.
- b) Only one patient should be bled at a time and the identification, labelling and packaging of the sample completed before any other patient is bled.
- c) Identify the patient and confirm their identity by checking:
  - i. Surname
  - ii. First name
  - iii. Date of birth
  - iv. Hospital Registration Numberfrom the patient's identification wristband and verbally from the patient/patient's family or from the patient's named nurse.
- d) All children requiring blood products should have an identification wristband to aid this process.
- e) The identification details should match those on the request form.
- f) In departments where identification bands may not be used, such as outpatients or Haemoglobinopathy Unit, the patient (or parent / carer) should be asked to state their full name and date of birth. These details must match the details on the request form.
- g) In the Operating Theatre, where it may not be possible to access the patient's wrist band during surgery, positive patient identification must have taken place before induction of anaesthesia.
- h) Label the sample tube at the bedside but do not pre label sample tubes prior to phlebotomy. The label should be completed in ink and be legible. Tubes with addressograph labels will not be accepted by Blood Transfusion Department.
- i) The following minimum details are required on the tube label:
  - i. Surname
  - ii. First name
  - iii. Date of birth
  - iv. Hospital Registration Number (or Casualty Number)
  - v. Date sample taken
  - vi. Signature of person taking sample.
- j) Incorrectly labelled specimens will not be processed by Blood Transfusion Department staff and a repeat sample and request form will be required.
- k) If the person requesting blood and the person taking the blood sample differ, the person taking the blood sample must countersign the request form as a further check on patient identification and write the date and time of sample collection.
- l) Document in the medical notes that a sample has been taken.

**Sample Requirements**

2ml in EDTA (crossmatch bottle) is normally sufficient for most investigations. A smaller sample, accompanied with a maternal 2ml sample is acceptable for infants under 4 months of age. Any deviation from these volumes may result in delays, due either to sample rejection, or the necessity to revert to more time consuming (and potentially hazardous) manual techniques.

**SUMMARY: BLOOD REQUESTS and SAMPLE**

- Use blood product request form, write legibly and fill in all appropriate details.
- When taking a blood sample for cross match, complete the whole procedure before any other task undertaken.  
Use Positive Patient Identification to identify your patient.
- **NEVER** pre-label sample tube before phlebotomy
- **ALWAYS** label tubes at the bedside.
- Make sure that request form details match sample tube
- Details : Name  
: Registration Number  
: Date of Birth  
: Date sample taken  
: Signature of person taking sample

**This is the most important part of the cross match process.  
Any error here may not be recognised later!**

### 3. Collection of blood from Blood Transfusion Department.

Prior to collecting, or requesting the collection of a blood component, in wards and day units the clinical practitioner should ensure:

1. the reason for the transfusion has been documented in the medical notes.
2. the reason for the transfusion has been explained to the patient and/or parent/carer.
3. the blood component has been prescribed on an appropriate chart.
4. the patient has patent venous access.
5. baseline observations have been recorded within 1 hr of the transfusion.
6. the blood component is ready for collection.

The Blood Transfusion Department is located within the Haematology Laboratory on the first floor of the Pathology Laboratory Block. Entrance to the laboratory is by swipe card. The Blood Bank refrigerator is located in the Blood Issue Room, along with the appropriate documentation for blood product collection. The following procedure should always be followed for blood collection.

1. Only Registered Nurses, Health Care Assistants, and ODP's who have received the appropriate training should collect blood from the issue fridge.
2. Blood should be collected ten minutes before it is required unless it is being temporarily stored in a satellite issue fridge.
3. A full patient documentation label (see below) must be taken to the Blood Transfusion Department issue room for checking when collecting the first unit of blood.

The Birmingham Children's Hospital NHS Trust  
Blood Transfusion Department  
**TO THE BLOOD BANK**  
Please supply compatible blood for the following patient:

Surname (BLOCK CAPITALS) \_\_\_\_\_  
Christian names \_\_\_\_\_  
Registration number \_\_\_\_\_  
Date of Birth \_\_\_\_\_  
Ward/Theatre \_\_\_\_\_  
Signed \_\_\_\_\_

**Blood cannot be issued except on presentation of this form with ALL particulars completed.**

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#### Request for supply of Blood

This form should be filled in at the ward, prior to collection of blood. The patient details are taken from the patient's notes and are a substitute for the patient notes at the point of blood issue.

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Department of Haematology and Blood Transfusion

The back copy of the Blood Transfusion Report Form is located in a black folder on the desk in the Blood Issue Room. This should be checked first to ascertain the shelf location in the Blood Bank fridge of the requested unit.

Remove requested unit of blood from the issue fridge. Identify the Blood Transfusion Report Form, found on the first of the units of blood crossmatched for the patient.

Birmingham Children's Hospital NHS Trust  
Seedhouse Lane  
Birmingham B4 6NH  
Blood Transfusion Enquiries: 0121 333 9874 Fax: 0121 333 9831

**Form for Patient Notes**

Surname	ACT	Reg No.	111111	Sex	F	Lab. No.	T.01.003989
Forename	TESTING	D.o.B.	02/05/1993	Ext Reg	R999999X		
Clinician	Dr. M.D Williams	Location	Haematology Dept (BCH)	Req ID	488386		
Diagnosis	Bleeding	M.O.	DOOLITTLE	Page No	1 of 1		

Blood Group: **A Rh (D) Positive**      Antibody Screen: **Negative**

Product	ABO	Rh(D)	Pack No.	Expiry Date	Date Given	Time Given	Signature
Red Cell Concentrate	A	POS	G053 601 106 319 5	25/05/2001			

Comments  
CMV Negative Products.

**Form for Blood Bank Records**

Surname	ACT	Reg No.	111111	D.o.B.	02/05/1993	Sex	F	Lab. No.	T.01.003989
Forename	TESTING	Location	Haematology Dept (BCH)	M.O.	DOOLITTLE				
Clinician	Dr. M.D Williams	Speciality	Haematology (Clinical)	Ext Reg	R999999X				
Diagnosis	Bleeding	Procedure	?	Page No	1 of 1				

Blood group: **A Rh (D) Positive**      Antibody Screen: **Negative**

Product	ABO	Rh(D)	Pack No.	Expiry Date	Date/Time Removed	Signature	Date/Time Returned	Signature
Red Cell Concentrate	A	POS	G053 601 106 319 5	25/05/2001				

Comments  
CMV Negative Products.

**Reservation details**

Birmingham Children's Hospital NHS Trust	Accredited	Deserve	Date & Time Received	Date & Time Required	Date Tested	Authorised by
Blood Transfusion	13/05/2001	11/05/2001 11:01	11/05/2001 11:01	11/05/2001	BRDC	

**Clear, legible signature required**

**Clear, legible signature required**

**Blood Bank Report Forms**

It is vital to check the details of the report match those details on the unit of blood. The pack number on the form should be checked against the bag number on the unit, **NOT** the one on the Blood Bank label (as this is a copy of the form)

- a) Check the details on this form against those on the Blood Compatibility Label on the unit of blood (see figure below – Section 5) and those on the Patient Documentation Label.

**NOTE: The Report Form must not be used to check blood compatibility at the bedside. This check must be done with the Donor Unit Compatibility Label and the patient wristband. (see section 5)**

- b) Check the unit Bar Code number on the bag of blood against the unit number on the Blood Transfusion Report Form.

**If any discrepancy is found as a result of these checks, do not sign out the unit but contact the Blood Transfusion Department laboratory staff immediately.**

Using the information on the unit of blood, confirm on the back copy of the Blood Transfusion Report Form:

- Patient's details
- Donor Unit Number
- **Date and time** unit of blood signed out
- Location of patient

**Sign the completed entry**

- c) Under normal circumstances, only one unit of blood for the patient is to be removed at any one time. More than one unit can be removed for the treatment of massive blood loss or if the units are being transferred to satellite fridges.

#### **4. Receipt of blood product in the clinical area.**

##### **1. On wards and Day Units**

- a) The person taking the unit of blood to either of these clinical areas should give it to the receiving registered nurse.
- b) The receiving nurse should confirm that it is the correct unit ordered for that particular patient.

##### **2. In operating theatres**

- a) Blood for planned operations is taken from the Blood Bank Issue fridge to the satellite fridge in Main Theatres using the procedures described in section three.
- b) Unused units of blood should be removed from Main Theatres on completion of the operating list by an ODP. If blood transfusion is required, these units may be placed in the PICU blood fridge. Otherwise, all blood products must be returned to Blood Bank Issue fridge (and signed back into the back copy in the black folder).
- c) Blood Transfusion Department staff check the PICU fridge daily (Monday to Friday) and will return unwanted blood to the Blood Transfusion Department.
- d) In the same way, daily checks are made on "flying squad" blood to ensure it is still within its expiry date.

**3. All Areas**

- a) There is a requirement by law that full traceability is available for all blood products.
- b) It is the responsibility of all staff involved in the administration of blood products to record all movement of blood products between authorised blood fridges/plasma freezers
- c) Date and time must be recorded for each unit removed from or placed into a designated storage unit to ensure that storage conditions have been met.
- d) Only staff who have been trained in blood collection may transfer units between blood fridges.
- e) Failure to record movement of blood products may result in costly wastage and potential risk to patients.

**SUMMARY: Collection and Receipt of Blood**

**ALWAYS** take a completed patient documentation label to the Blood Transfusion Department issue room when collecting the first unit of blood.

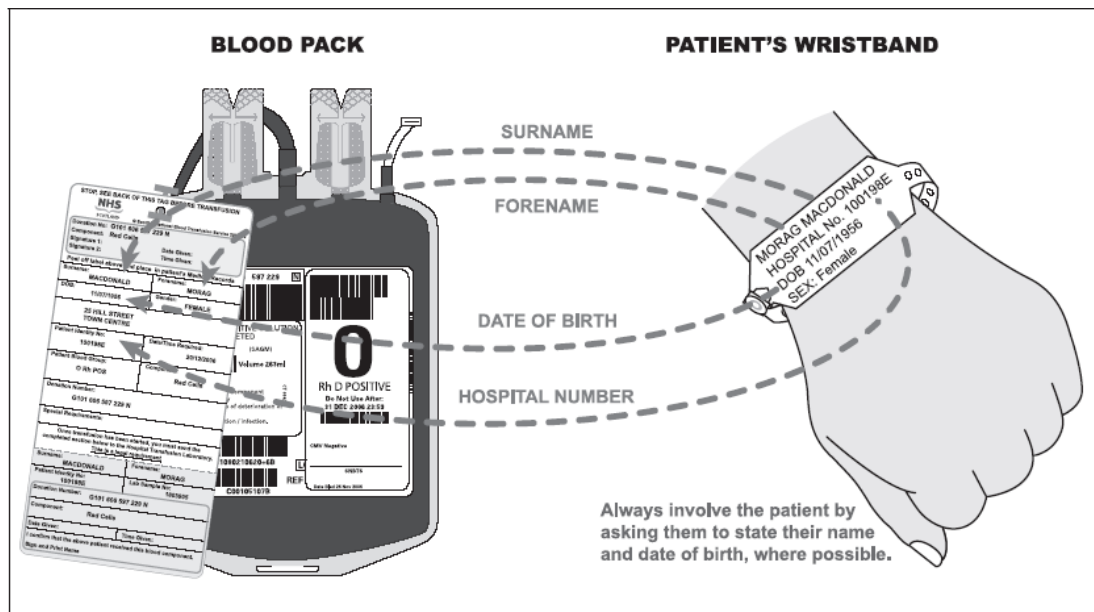
**MATCH** the details on the Blood Transfusion Report Form against the blood compatibility label (**tag**), the bag unit number and the patient documentation label.

If everything matches, sign out the unit with the date and time.

If any discrepancy, **DO NOT** sign out the unit and contact Blood Transfusion Department staff immediately.

When receiving the unit of blood in the clinical area, check that it is the right unit for the right patient.

## 5. The bedside check and the administration of blood.



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Staff responsible for the checking and administration of blood consist of qualified Nurses, ODP's, Perfusionists and Medical Staff.

Two qualified nurses/ODP's/Perfusionists acting independently will be responsible for checking the unit at the bedside and for its administration. Prior to administration the nurses will check:

- a) That the unit of blood and its rate of transfusion have been prescribed in mls and the prescription signed on the patient's current intravenous infusion chart by the relevant medical officer.
- b) That the patient's identity details on the wristband match with the details on the blood compatibility label and the IV prescription chart, these details consisting of :
  - i. First name
  - ii. Surname
  - iii. Date of Birth
  - iv. Hospital registration number.
- c) That the NHSBT Bar Code Number on the bag must match the unit number on the Blood Transfusion Label.
- d) That the Blood group and Rh status of the product is compatible with the patient.
- e) That the expiry date on the unit has not been reached and that the unit is in date.
- f) That the unit to be transfused complies with any special requirements stated on the IV prescription chart e.g. irradiated blood.
- g) The physical state of the unit of blood: it must be examined for discoloration, turbidity, evidence of haemolysis, and for clots or air in the bag. Leaks must be excluded by gently pressing the bag between both hands.
- h) The final bedside check. Using Positive Patient Identification, check the patient details with the patient, wristband and blood compatibility label (tag).



**If there are any discrepancies or abnormal findings as a result of the checking procedure, do not transfuse the unit of blood and contact the senior nurse and Blood Transfusion Department staff for further advice.**

**Transfusion must be completed within 4 hours of removal from a blood fridge. If the transfusion is likely to take most of this 4 hour period, administration must commence as soon as possible after the blood is removed from the fridge.**

**Any unit which has been out of storage for more than 30 minutes must not be returned to storage. If not for transfusion within 4 hours of removal, these units must be returned directly to the Blood Transfusion Department for disposal. Blood transfusion staff must be informed.**

On completion of the checking procedure the unit should be connected to a suitable intravenous giving set by firm insertion into the blood bag port. Suitable giving sets have an integral screen filter (170 - 200µm). Change the administration set at least every 12 hours for a continuing transfusion and on completion of the transfusion. Guidelines for changing administration sets have been recommended by the British Committee for Standards in Haematology (BCSH, 2009), McClelland (2007) and Royal College of Nursing (2005). The blood infusion rate should be adjusted after the blood has filled the giving set and is passing through the cannula. The start time of the blood transfusion should be recorded on the blood prescription chart or observation chart in areas where the prescription chart is not available (e.g. Theatres).

### **Choice of blood group for BLOOD**

Patient's ABO Group	First Choice	Second Choice	Third Choice
O	O		
A	A	O*	
B	B	O*	
AB	AB	A* or B*	O*

**\*Selection of blood of a different group should be negative for high titre anti A and/or anti B as appropriate.**

**Note (1) Rhesus negative blood may be given to a Rhesus positive recipient in times of shortage. Rhesus positive blood must not be given to a Rhesus negative recipient unless authorised by the consultant Haematologist**

**Note (2) The above table does not apply to patients under the Bone Marrow Transplant (BMT) or Liver Transplant programme. Please refer to separate BMT or Liver Transplant protocols.**

## **6. Observations carried out on patients receiving transfusion.**

The following observations must be carried out by the practitioner responsible for the patient's care during transfusion:

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Department of Haematology and Blood Transfusion

Temperature, pulse rate, blood pressure and respiratory rate recorded

- a) within 1 hr of the start of the transfusion
- b) at the start of each subsequent unit transfused
- c) fifteen minutes after the start of transfusion of each unit.
- d) Carry out a final set of observations 15 minutes after each unit has been transfused.

There should be continual visual observation of the patient during the transfusion.

Standard intraoperative observations are acceptable in the Operating Theatre. These must be clearly recorded on the anaesthetic chart.

No additional formal observations are necessary unless the patient develops an adverse reaction during the transfusion (see below). Such formal observations should not detract from the need to carry out general observations of the patient throughout the transfusion period. Record the stop time of the transfusion on the blood prescription chart or observation chart in areas where the prescription chart is not available (e.g. Theatres).

### **SUMMARY: The Bedside Checks**

Check that the prescription of blood is correct

Check that patient's identity details are identical on:

- the unit of blood and compatibility label
- the patient identification wrist band
- the IV prescription chart

Check the NHSBT bar code number on the blood bag matches the pack number on the Blood Transfusion Compatibility Label

Check that the unit of blood is in date

Check that the blood appears normal

Final Bedside Check (patient details with the patient, wristband and Blood Compatibility Label (tag)).

**DO NOT TRANSFUSE THE UNIT IF ANY DISCREPANCY FOUND DURING THE ABOVE CHECKS. RETURN THE UNIT TO BLOOD TRANSFUSION DEPARTMENT.**

**This is the last chance to avoid potential disaster!**

## 7. Adverse reactions to blood transfusion

If the patient receiving a transfusion develops any of the following symptoms:

Pyrexia	Rigor/Chills	Lumbar Pain
Rash/Pruritis	Hypotension/Tachycardia	Dyspnoea
Dark Urine	Vomiting	Jaundice
Oliguria/ Anuria	Chest Pain/Discomfort	Restlessness

The following actions must be taken immediately:

- Stop the transfusion
- Repeat the observations and document them
- Inform the patient's doctor
- Re-check the patient details on the wristband with the blood compatibility label.
- Document in the medical notes and complete an IR1 form.

The doctor must decide:

- Whether to continue the transfusion
- If any treatment of the reaction is required
- If discussion with a Consultant Haematologist is required
- If further laboratory investigation is required.
- To inform Blood Bank.

Transfusion reactions and their treatment are described in Appendix 7.

## 8. Documentation of Transfusion

It is essential that all transfusions of all blood products are documented so that the audit trail for a blood component can be completed.

- All blood and blood products for transfusion must be prescribed by a qualified practitioner.
- Medical staff should detail the reason for transfusion in the patient's case notes.
- The nurses responsible for checking and administering the blood unit should sign the Blood Transfusion Report Form and the IV fluid prescription chart.
- The Blood Transfusion Report Form should be filed in the patient's case notes (Haematology results section) on completion of the transfusion.
- The IV fluid prescription chart should be filed in the patient's case notes on completion of the transfusion.
- The observation chart for the period of transfusion should be filed in the patient's notes.
- The start time, stop time and volume given should be documented for each unit transfused.

Intraoperative transfusions should be recorded on the anaesthetic chart. Information should include the blood products administered, their unit numbers, start and stop times and the volume administered.

**The blue tear off portion of the transfusion tag must be removed and signed as soon as the transfusion is commenced. This portion must be returned to the Blood Transfusion Department at the earliest opportunity (through the air tube, by hand or through locally agreed protocol) within 24 hours.**

## 9. On completion of transfusion

Used blood packs are not discarded but are stored on the ward or in Theatres for 24 hours before disposal. If a transfusion reaction is suspected, the suspect unit of blood should be returned immediately to the Blood Transfusion Department for further investigation (see Investigation of Transfusion Reaction, Appendix 7)

Check that the blue portion of the compatibility label has been removed and returned to the Blood Transfusion Laboratory.

**Failure to inform the Blood Transfusion Laboratory of a transfusion will result in an incomplete record of transfusion, which is a failure to meet legal requirements. Any part of the blood traceability chain which is incomplete will result in time consuming follow up and failure to comply with completing these records may result in disciplinary measures.**

## 10. Technical notes on transfusion

- a) It is best practice for the blood transfusion to be commenced as soon as possible after removal of the unit from the blood fridge.
- b) After removal from the blood fridge, blood may be returned for further storage within a maximum of 30 minutes if transfusion is not required.
- c) Transfusion of a unit of blood should be completed within a maximum period of four hours after removal from the blood fridge: discard the unit if this period is exceeded.
- d) If blood has been out of the blood fridge for more than 30 minutes and is not transfused, then the unit must be returned to the Blood Transfusion Laboratory, where it will be disposed of.
- e) Transfusion rate depends on clinical circumstances and may vary from 3-5 mls/kg/hour to greatly increased rates for individuals in hypovolaemic shock.
- f) Remove only one unit at a time from the issue or satellite fridge prior to transfusion, unless clinically indicated, to avoid unnecessary discards.
- g) Blood must never be stored in a ward refrigerator under any circumstances.
- h) Drugs should never be added to blood.
- i) Only use giving sets specified for use for blood/blood components
- j) Only use infusion pumps verified by the manufacturer as safe for blood transfusion.
- k) Blood Warmers must be specifically designed devices for this blood transfusion purposes.
  - i. Each patient should be assessed and the risks of potential heat loss considered.

- ii. Special consideration should be given when rapidly transfusing large volumes.
- l) All blood donations are leucodepleted at source and there is therefore no indication to use white cell filters for transfusion of blood or blood products.
- m) Errors which occur during the blood transfusion process must be documented on an Incident Form. Failure to comply with the transfusion process described in this protocol will be taken seriously by the Trust.
- n) Top-up blood transfusion should not be prescribed based solely upon the results of Point of Care Testing (POCT) equipment (gas analyser or HemoCue). A pre-transfusion laboratory haemoglobin should always be requested prior to a top-up. POCT Hb is only to be used to estimate the level of acute blood loss (e.g. perioperative assessment, management of GI bleed etc.).

## **11. The administration of Fresh frozen plasma (FFP), Solvent Detergent Plasma (Octaplas) and cryoprecipitate.**

From April 2011, solvent detergent plasma will be issued in place of Methylene Blue treated single donor FFP (except where there is a local protocol agreed with the blood transfusion laboratory). MBFFP and Octaplas are interchangeable for the purpose of this protocol.

There are few indications for the use of these blood products and they should be used as indicated in the Trust's guidelines (see Appendix 1)  
FFP and cryoprecipitate are stored at less than  $-30^{\circ}\text{C}$  in freezers located in the Blood Transfusion Department, and the Blood Issue Room.

### **a) Requesting FFP or cryoprecipitate.**

Requests may be made on the Blood Product Request Form or by telephone request to the Blood Transfusion Department. The following details must be given:

- i. First name
- ii. Surname
- iii. Date of birth
- iv. Hospital registration number
- v.

Indicate the urgency with which the blood product is required and request 10-15 mls/kg recipient weight. Use ABO compatible FFP whenever possible. In addition:

- i. Give group O FFP only to group O recipients
- ii. Group A or group B may be given group O recipients
- iii. Give group AB plasma to group AB recipient or in an emergency when recipient's blood group is unknown (universal donor).

### **b) Thawing of product.**

- i. The unit should be thawed in a controlled fashion, using a thermoregulated water bath available in the Operating Theatres or Emergency Department.

- ii. Ensure the unit is fully thawed.
- iii. As it is being used to replace depleted coagulation factors it should be transfused within **4 HOURS** of being thawed.
- iv. Alternatively, thawed plasma may be stored in a regulated blood fridge for up to 24 hours before use.
- v. Any unused plasma units must be returned to the Blood Transfusion Department for disposal.
- vi. Do not attempt to refreeze a thawed or partially thawed unit.

**c) Collection of product.**

- i. FFP or cryoprecipitate should be collected from the Issue Room fridge by registered Nurses, Health Care Assistants and ODP's who have received the appropriate training.
- ii. Remove the unit from storage and identify the top copy of the Blood Transfusion Report which will be attached to the first bag for transfusion.
- iii. Check the patient's details on the Patient Information Label with the details on the Blood Transfusion Report Form and the Blood Pack Compatibility Label on the unit, exactly as described for units of blood in Section 3.
- iv. Sign the bottom copy of the Blood Transfusion Report form having completed the date and time and the patient's location.

**d) Checking and Administration of Unit.**

- Plasma and plasma products should be checked and administered in the same way as blood, but the units should be examined for any discoloration, turbidity, frozen plasma, air in the bag and checked for leaks.

**e) Observations**

- FFP and cryoprecipitate are blood products and the same observations should be carried out as described in Section 7.

**f) Documentation of transfusion**

- Documentation of the transfusion should be carried out as described in Section 8 and 9.

**g) Choice of Blood Group for PLASMA (FFP, Octaplas, Cryoprecipitate, cryodepleted plasma)**

**NB: Group O should only be given to group O patients**

Patient's ABO	First Choice	Second Choice	Third Choice
---------------	--------------	---------------	--------------

Group			
O	O	A, B or AB	
A	A	AB	B*
B	B	AB	A*
AB	AB	A*	B*

**\* Components must be tested negative for High-Titre anti-A and/or anti B and should only be used in time of extreme shortage**

## 12. Administration of Platelets

### a) Requesting of platelets

Platelets must be requested by medical staff either by phone or using the Blood Product Request form. Inform the Blood Transfusion Department as to the urgency of the request. In an emergency, platelets of any blood group should be given to arrest bleeding, though the Blood Transfusion Department will supply platelets of the same blood group as the patient wherever possible. Single donor apheresed platelets will always be requested from NHSBT by the Blood Transfusion Department, but random packs of donor platelets will be released if there is no alternative at that time. Small volume paediatric platelet packs are not stocked routinely but are available from the NHSBT: advance notice is necessary. These packs are to be used in preference to reduced volume adult packs.

- **The recommended volume of platelet concentrate is 10 – 15 ml/kg for children <15kg and one apheresis unit for children >15kg**

If you are uncertain as to the criteria for platelet transfusion please discuss this with a Consultant Haematologist

### b) Collection of platelets

Platelets are stored at room temperature on a platelet agitator in the Blood Transfusion Department Issue Room. A similar platelet agitator is located on Ward 15.

The same criteria apply as to the procedure for collection of platelets as described for blood in Section 3. The person collecting the platelets must sign the bottom copy of the Blood Transfusion Report Form in the Blood Transfusion Department Register.

### c) Checking and administration of platelets.

The same criteria apply to the checking of units of platelets as described for units of blood in Section 5. Platelets are administered through an appropriate platelet giving set.

### d) Observations

As for blood transfusion

### e) Documentation

The same criteria apply as described for blood transfusion in Sections 6, 8 and 9.

**f) Choice of blood group for PLATELETS**

Patient's ABO Group	First Choice	Second Choice	Third Choice
O	O	A or B	
A	A	B	O
B	B	A	O
AB	A or B	O	

**Note: Selection of platelets of a different group should be negative for high titre anti A and/or anti B as appropriate.**

**Rhesus negative platelets may be given to a Rhesus positive recipient in times of shortage. Rhesus positive platelets must not be given to a Rhesus negative recipient unless authorised by the Consultant**

**Haematologist . The use of group O platelets for non-group O recipients should be avoided as much as possible**

**13. Administration of granulocytes (buffy coats)**

- Granulocytes should be administered as soon as possible after preparation.
- The component must be stored at 22°C ± 2°C.
- DO NOT REFRIDGERATE.
- DO NOT AGITATE.

**14. Transfer of blood to BCH from other hospitals.**

Transfer of blood products between hospitals is to be discouraged, except where a blood product transfusion during transit is essential for maintaining or improving a patient's immediate status. Un-transfused products should be taken to the blood transfusion laboratory as soon as practicable, for disposal or validation. A new blood transfusion request should be sent to the Blood Transfusion Department on admission. In exceptional circumstances, product transfers will be sanctioned by the Blood Transfusion Laboratory, but only where agreed between the Blood Transfusion Laboratories of both the sending and receiving hospitals.

Protocol: See Appendix 11

**15. Training and Assessment.**

All staff involved in the Blood Transfusion Process should receive training and competency assessment. The Blood Transfusion Process involves:-

- i. Blood Sampling (for pre-transfusion testing)
- ii. Blood Collection
- iii. Blood Administration



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See Training Matrix (Appendix 9)

Training and Assessment guidelines and resources are available from the Hospital Transfusion Team.

**a) Training**

- Qualified Nurses, Support Workers and Theatre Practitioners who are involved in the Blood Transfusion Process should attend the Trust Blood Administration study day unless they have either attended a department blood transfusion session or participated in the Accredited Prior Experiential Learning (APEL) process as per the BCH Competency Documentation Policy.
- All staff involved in the Blood Transfusion Process should receive an annual update in blood transfusion practice.

**b) Assessment**

- All staff involved in the Blood Transfusion Process must be assessed as competent for their part in the process.
- Staff should be competency assessed for Blood Sampling and Blood Administration every 3 years. As recommended by the National Patient Safety Agency (NPSA) Safer Practice Notice (2006) "Right patient, right blood").
- Staff should be competency assessed for Blood Collection every 2 years. The Medicines and Healthcare products Regulatory Authority (MHRA) have stated that assessments in Blood Collection should be at least every two years.

**16. Monitoring compliance with and the effectiveness of the policy**

**a) Process for monitoring compliance and effectiveness of training**

- Compliance to training and assessment will be monitored through the Trust Quarterly Training Report Process. See Appendix 12
- The Trust Board, Strategic Education Forum and Directorate leads to receive performance reports stating activity and compliance against mandatory training KPIs on a quarterly basis.
- Heads of Departments and Ward Managers will receive performance reports stating activity and compliance against mandatory training KPIs on a quarterly basis.

**Process to Deal with Non Compliance**

- The Education and Learning Team request action plans from Heads of Departments and Ward Managers with planned activity to ensure compliance against mandatory training KPI's.
- Non return and achievement of action plans will be reported by the Education and Learning Team to Directorate Performance leads, Heads of Departments and Ward Managers.

**b) The process for the administration of blood and blood products and the care of patient(s) receiving a transfusion will be will be monitored by way of the following:**

- There will be an annual cycle of internal audits devised by the hospital transfusion team.
- The trust will participate in external National and Regional Transfusion Audits.
- Audits will be reviewed at the HTC every 4 months
- Blood transfusion Incidents are reported via The Trust Incident Reporting system.
- The HTT reviews all transfusion related incidents monthly and reports nationally to the SABRE/SHOT haemovigilance scheme.
- The Trust Incident Reporting system will be reviewed at the HTC every 4 months for transfusion related incidents.
- The HTC will report audit findings and recommend action plans to the trust, through its minutes and/or the chairman's report to ensure compliance to the policy.

**c) Standards/Key performance indicators**

- Following receipt of quarterly reports all wards/departments should complete and return an action plan for staff members who require blood transfusion training and assessment.
- Standards will be monitored and assessed through audit programmes and review of Trust Incident Reports (IR1).

## Appendix 1 - Indications for the Use of Fresh Frozen Plasma

### 1 DEFINITE:

- a) Replacement of a single coagulation factor deficiency where a specific or combined factor concentrate is unavailable or contra indicated.
- b) Immediate reversal of warfarin effect if prothrombin complex concentrate unavailable.
- c) Thrombotic thrombocytopenic purpura.
- d) Inherited deficiencies of coagulation inhibitors (PC, PS, AT) if no specific concentrate available).
- e) C1 esterase inhibitor deficiency if specific concentrate unavailable.

### 2 CONDITIONAL:

- a) Massive blood transfusion (see Appendix 15)
- b) Acute disseminated intravascular coagulation if coagulation abnormalities and patient bleeding.
- c) Liver disease - prophylactic use to reduce PT to 1.6-1.8 x normal for liver biopsy  
- abnormal coagulation and patient bleeding.
- d) Cardiopulmonary bypass surgery (use in presence of bleeding and abnormal coagulation not due to heparin. Routine perioperative use is not indicated.
- e) Severe sepsis, particularly neonates (independent of DIC).
- f) Plasmapheresis.

Because of theoretical concerns about the possibility of transmission of vCJD through transfusion of blood products derived from UK blood donors, the DOH has recommended that all children (<16yrs old) should receive plasma which has been sourced from countries which are free from vCJD. In keeping with these recommendations, children at BCH may be treated with pooled, solvent detergent treated non-UK sourced plasma (Octaplas), or single donor, non-UK sourced plasma which has been virucidally treated with Methylene Blue.

## APPENDIX 2 - Indications for the Use of Platelet Transfusion

- i. Bone Marrow Failure:
  - a) Treatment of bleeding, thrombocytopenic patients.
  - b) Prophylactic use in thrombocytopenic patients
    - Maintain platelet count  $> 10 \times 10^9/l$  in non-bleeding, non-infected patient.
    - Maintain platelet count  $> 20 \times 10^9/l$  in infected/pyrexial patient.
- ii. Disseminated Intravascular Coagulation (DIC):

Acute DIC, where bleeding is associated with thrombocytopenia. Maintain platelet count above  $20 \times 10^9/l$  even in the absence of overt bleeding.
- iii. Massive Blood Transfusion  
Maintain platelet count  $> 50 \times 10^9/l$  in patients receiving massive transfusions (dilutional thrombocytopenia occurs when  $> 1.5 \times$  blood volume of patient transfused). See Appendix 15
- iv. Cardiopulmonary Bypass Surgery:

Platelet function defects and thrombocytopenia often occur after cardiac bypass surgery. Platelet transfusion is recommended for patients with bleeding not due to surgically correctable causes (closure time provides global indication of platelet function).  
Prophylactic platelet transfusions are not required for all bypass procedures.
- v. Prophylaxis for surgery.

Ensure platelet count is  $> 50 \times 10^9/l$  for procedures such as lumbar puncture, epidural anaesthesia, insertion of indwelling lines, transbronchial biopsy, liver biopsy, renal biopsy and laparotomy.  
Maintain platelet count  $> 100 \times 10^9/l$  for neuro and ophthalmic surgery.
- vi. Platelet Function Disorders.

Congenital platelet function disorders may require prophylactic or therapeutic platelet transfusions. Use HLA matched platelets whenever possible. Always discuss transfusions with Consultant Haematologist. Acquired platelet function disorders are relatively common, e.g. drug-induced, renal failure etc. Stop any incriminating drug, correct underlying condition where possible and consider the use of DDAVP in e.g. uraemic patients. Use platelet transfusion where above measures are inappropriate or ineffective.
- vii. Immune Thrombocytopenia.

Autoimmune thrombocytopenia (ITP). Give platelet transfusion only when major haemorrhage occurs. May require multiple platelet transfusions to achieve haemostasis.  
Neonatal alloimmune thrombocytopenia (NAIT). Use platelet concentrates from donors known to be seronegative for the appropriate platelet antigen (usually PI A1) if donor unavailable, or specificity of

antibody unknown, use mother as donor (irradiate platelets before infusion). If urgent need for platelets, use random donor platelets.

### **Dose of platelet concentrates**

For children under 15kg, prescribe at 10-15ml/kg  
For children over 15kg, prescribe 1 adult apheresis pack.

### **ABO Compatibility**

Use platelets of same ABO blood group as recipient where possible. Ensure donors do not have high titre anti A or anti B if giving platelets of an alternative blood group. Group O platelets should be avoided, whenever possible, for patients of group A, B or AB

### **Storage and Shelf Life**

Keep platelet concentrates at 22<sup>0</sup>C to ensure maximum viability. The shelf life of platelet concentrates is normally 5 days when kept at this temperature on a platelet agitator. Some extended life platelets may be used, especially at times of shortage. These have a shelf life of 7 days.

### **APPENDIX 3 - Indications for the use of Human Albumin Solution, (4.5% and 20%)**

1. These indications have been summarised from the Trust's Guidelines for the use of Human Albumin Solution. (HAS).
2. HAS can be considered alongside isotonic crystalloid solutions and Gelofusine in the treatment of shock, although it has not been shown to confer any definite benefit and is considerably more expensive. The exception is suspected septic shock where HAS may be of benefit. A relative contraindication is fluid resuscitation in head injury patients.
3. Albumin replacement - Necessary in situations where rapid depletion of albumin occurs:
  - Plasmapheresis
  - Burn injuries
  - Pericardial loss
  - Peritoneal loss
4. Albumin supplementation - There are very few clinical indications for supplementation, the main indication being its role in the acute management of hypovolaemia during nephrosis in order to maintain plasma volume (2-5 mls/kg 20% HAS).
5. Hyperbilirubinaemia - 20% HAS may be used in conjunction with exchange transfusion in the treatment of Haemolytic Disease of the Newborn: give 5-7 mls/Kg slowly prior to the exchange transfusion.

## **APPENDIX 4 - Indications for the Use of Irradiated Blood Products**

Irradiation of blood components may be necessary to prevent transfusion associated graft versus host disease in susceptible individuals. The following groups are considered to be at risk of this complication:

### **1) Intrauterine and exchange transfusions in the foetus, neonate and infant**

- a) IUT - irradiate all blood
- b) IUT and subsequent exchange transfusion - irradiate all blood.
- c) Exchange transfusion - little evidence exists to support this as routine practice.
- d) Patients receiving blood from first or second degree relatives.

### **2) Top up transfusions of infants (premature and term).**

Irradiation is not necessary unless a previous IUT has been given – up to 6 months post EDD

### **3) Congenital Immune Deficiencies.**

Irradiation of cellular blood products should be undertaken for all congenital immune deficiencies, for example SCID, Di George's syndrome, Wiskott Aldrich syndrome.

**Irradiate blood products from the time that a diagnosis is first suspected.**

### **4) Cardiac Surgery.**

Maintain a high index of suspicion concerning coexisting cardiac defects and immune deficiency: look for dysmorphic features, anomalies of ear, lip or palate, hypocalcaemia and absolute lymphopenia ( $< 2 \times 10^9/l$ ). There is no need to irradiate red cells or platelets for infants undergoing Cardiac Surgery unless clinical or laboratory features suggest a coexistent immune deficiency.

If in doubt, irradiate blood until a definite diagnosis of immune deficiency is excluded. Inform the Blood Transfusion Department if immune deficiency has been excluded.

Refer to local Cardiac Surgical guidelines

### **5) Allogenic Bone Marrow Transplantation.**

All recipients of allogenic BMT should receive irradiated blood products from the time of conditioning. Irradiated blood products should be continued until GVHD prophylaxis is discontinued or until the lymphocyte count is  $> 1 \times 10^9/l$ . Irradiation will be necessary for a longer period in patients transplanted for SCID or in patients with chronic GVHD.

### **6) Donors of allogenic Bone Marrow/ Peripheral Blood Stem Cells.**

Blood transfused to bone marrow donors prior to or during the harvest should be irradiated.

**7) Autologous Bone Marrow/Peripheral Stem Cell Recipients.**

Patients undergoing harvesting for future autologous re-infusion should receive irradiated cellular blood products during and for 7 days before the harvest. All patients undergoing these procedures should receive irradiated products from the start of conditioning to 3 months post transplant (6 months if TBI given).

**8) Hodgkin's Lymphoma.**

Irradiation of cellular blood products is recommended for children with any stage of Hodgkin's lymphoma.

**9) Chemotherapy.**

Patients given the purine antagonists **Fludarabine, 2 chlorodeoxyadenosine and 2 deoxycytosine, clofarabine and any other purine analogue** should receive irradiated cellular components.

**Blood components which need Gamma Irradiation**

Red cells, platelets and granulocytes DO need irradiation.  
FFP, Cryoprecipitate and fractionated plasma products DO NOT need irradiation.

**Expiry date of irradiated blood products**

Blood can be irradiated at any time up to 14 days after collection. It can be then stored for a further 14 days from irradiation.

For IUT, Exchange Transfusion or large volume transfusion in infants (>1 blood volume), transfuse blood within 24 hours of irradiation and within 5 days of collection.

**Irradiated product information card.**

All recipients of irradiated blood products should be supplied with a card giving details of this procedure.

N.B. Irradiated blood has a higher potassium concentration than non-irradiated blood. Caution must be exercised in rapid or massive transfusion of irradiated blood. Monitor the serum potassium concentration closely.

Irradiated products may be given to patients where irradiation is not indicated without deleterious effect, provided product expiry conditions are met.



## APPENDIX 5 - Investigation and Treatment of Transfusion Reactions

### a) Investigation of a suspected transfusion reaction.

Transfusion reactions may be acute or delayed. Acute reactions range from a non-specific febrile episode to a life-threatening intravascular haemolysis. All suspected transfusion reactions should be therefore assessed and treated appropriately.

1. If an acute transfusion reaction is suspected, stop the transfusion and inform the relevant doctor immediately, who will decide whether to continue with the transfusion. If the transfusion is discontinued, keep the IV line patent with an infusion of 0.9% sodium chloride.
2. Investigation of a transfusion reaction should include :
  - a) Repeat check of the labelling of the blood unit against the details on the Blood Report Form and against the patient's identification details.
  - b) Obtain venous blood sample from a vein away from the transfusion site.
  - c) Send the following investigations:  
  
2 mls EDTA blood to Haematology for Full Blood Count.  
2 mls citrated blood to Haematology for Coagulation Screen.  
2-4 mls EDTA blood to Blood Transfusion Department for antibody investigation.  
1 ml clotted blood to Clinical Chemistry  
2 mls for blood culture to Microbiology.
3. Return the bag of blood which was being transfused at the time of the Reaction to Blood Transfusion Department together with all previously transfused bags.
4. Send the first sample of urine produced after the transfusion to Clinical Chemistry for urobilinogen estimation.

**If you are uncertain of the type of reaction or its relevance, please contact Haematology for further advice.**

### b) Treatment of transfusion reactions.

Identify the type of transfusion reaction and treat appropriately.

- i. **Acute Haemolytic Reaction** (chest/loin pain, dyspnoea, shock).  
Maintain airway, maintain renal blood flow, and monitor renal output.  
Treat DIC.
- ii. **Febrile Reaction**. Give paracetamol. Observe closely until signs and symptoms resolve. Discuss further transfusion with Haematologist.
- iii. **Allergic Reaction**. (Pruritis, urticaria, anaphylaxis). Give antihistamine, steroid or adrenaline as required. Discuss further transfusion with Haematologist.

- iv. **Septicaemia.** Broad spectrum intravenous antibiotics, e.g. gentamicin and ceftazidime. Maintain airway, maintain renal blood flow. Treat DIC (high mortality rate)

## APPENDIX 6 - The Transfusion of Neonates and Infants

The following recommendations are made for the transfusion of children **in the first four months of life:**

### a) Pre-transfusion testing

- i. Maternal samples. ABO and Rh D group  
Antibody screen  
(5 mls clotted blood)
  - ii. Infant samples. ABO and Rh D group  
Direct antiglobulin test (DAT)  
Antibody screen if maternal sample unavailable  
(1-2 mls clotted blood).
- If the maternal antibody screen is negative and the infant's red cells are DAT negative, cross matching is unnecessary and blood of the baby's group can be issued. Alloantibodies are rare in the first four months of life and are related to repeated massive transfusions and to the use of fresh blood.
  - If the maternal antibody screen and/or the baby's DAT are positive, serological investigation and full compatibility testing will be necessary.

**After the first four months of life, cross matching procedures should conform to the requirements for older children/adults.**

### b) Top up transfusions.

- Cross-match procedures are as described above.
- Limit donor exposure whenever possible: if repeated transfusions likely in the same baby then notify Blood Transfusion Department so that satellite bags (40mls) can be arranged.
- Use small volume packs whenever possible: the NHSBT will provide these packs at short notice.
- Packed red cells (Hct 0.55-0.75) should be used for top-up transfusions.
- Red cells in optimal additive solutions, e.g. SAG-M or CPD blood can be safely used for top-up transfusion in this age group.
- Complete transfusions within 4 hours. Transfusion rates of 5 mls/kg/hr are safe: increase rate if active haemorrhage and reduce if cardiac failure exists.
- Due to the small volume of blood to be transfused, it is acceptable to flush the giving set with an appropriate fluid (e.g. isotonic (normal) saline) to extract the full volume of red cells.

### c) Exchange Transfusion

- Cross match procedures are as described above.

- Use blood of the ABO group of the neonate or use an alternative compatible with maternal ABO antibodies. Otherwise use designated group O Rh compatible units.
- Use blood compatible with any maternal irregular antibodies.
- Age of blood should be within five days of collection.
- When carrying out an exchange transfusion use whole blood for the first exchange followed by plasma-reduced blood (Hct 0.55 – 0.60) for the second exchange. This is the only indication for whole blood and consequently advance notice will be required by the NHSBT to supply this product. Discuss alternatives with Consultant Haematologist.
- Use irradiated blood if the neonate has had IUT previously.
- Use a blood warmer. Only approved and regularly monitored blood warming equipment should be used: fatal transfusion reactions have followed the use of inappropriate blood warming procedures.

**d) Blood products available for neonatal transfusion.**

Remember availability of:

- Small volume satellite bags for red cell transfusions
- Small volume platelet packs
- Small volume packs of FFP (not Octoplas)

## APPENDIX 7 - Blood Products Used at BCH

Product	Volume, mls	Storage
Red Cells -Satellite packs for neonates/infants (SAGM)	45 (HCT 0.5-0.7)	4 <sup>0</sup> C ± 2 <sup>0</sup> C
Concentrated red cells (SAGM)	275 ± 30 (HCT 0.5-0.7)	4 <sup>0</sup> C ± 2 <sup>0</sup> C
MBFFP (non UK)	275	< - 30 <sup>0</sup> C
MBFFP (non UK) neonatal	65	< - 30 <sup>0</sup> C
Octaplas (non UK)	200	< - 30 <sup>0</sup> C
MB Cryoprecipitate (non UK)		< - 30 <sup>0</sup> C
Cryosupernatant	180 – 300	< - 30 <sup>0</sup> C
Platelets, apheresed	150 – 350	22 <sup>0</sup> C ± 2 <sup>0</sup> C on agitator
Platelets, apheresed, for neonatal use	75 – 150	22 <sup>0</sup> C ± 2 <sup>0</sup> C on agitator
Apheresed Granulocytes	One pack	22 <sup>0</sup> C ± 2 <sup>0</sup> C

## **APPENDIX 8 - Cross-match Requests: A Definition of Terms**

### **a) Group and antibody screen:**

Red cells are ABO and Rh D typed.

Serum screened for antibodies directed against patient's red cells.

Takes about 40 minutes.

If screen is negative and blood transfusion subsequently required, ABO compatible blood can simply be issued (electronic issue)

**Note: Electronic cross-matching was introduced into the Hospital Blood Transfusion Department in 2007. In effect, all requests for group and save have an antibody screen performed.**

**In 2005 preoperative assessment clinics were introduced in specialties such as orthopaedics. Requests for group and save are routinely made at such clinics; if the antibody screen is negative and the child remains untransfused in the period up to surgery then blood will be issued on request. If the delay between the assessment clinic and surgery is greater than 6 weeks then another antibody screen will be required by the Blood Transfusion Department (see Appendix 13).**

### **b) Cross-match:**

Donor red cells tested against patient's serum and fully compatible units of blood issued.

Takes about 40 minutes.

### **c) Emergency request:**

Use Group O, Rh negative units from satellite fridges or Blood Bank.

If blood group known, use non-crossmatched blood of the same ABO and Rhesus groups.

Takes as long as it takes you to run.

### APPENDIX 9 - Blood Transfusion Training Matrix

			COMPETENCY 1. BLOOD SAMPLING (For pre-transfusion purpose)		COMPETENCY 2. BLOOD COLLECTION		COMPETENCY 3. BLOOD ADMINISTRATION	
	Induction	Training	Required	Re- assessment	Required	Re- assessment	Required	Re- assessment
Phlebotomists	Yes	Annual	Yes	3 yearly	No	N/A	No	N/A
Specialist Nurses (as required for job role)	Yes	Annual	Yes	3 yearly	Yes	2 Yearly	Yes	3 Yearly
Qualified Nurses (as required for job role)	Yes	Annual	Yes	3 yearly	Yes	2 Yearly	Yes	3 Yearly
Support Workers (as required for job role)	Yes	Annual	No	N/A	Yes	2 Yearly	No	N/A
Medics/Surgeon s (as required for job role)	Yes	Annual	Yes	3 yearly	No	N/A	No	N/A
Anaesthetists / Intensivists	Yes	Annual	Yes	3 yearly	No	N/A	Yes	3 Yearly
Theatre Practitioners (as required for job role)	Yes	Annual	No	N/A	Yes	2 Yearly	Yes / No	3 Yearly

## APPENDIX 10 - Maximum Surgical Blood Ordering Schedule (MSBOS)

For certain operative procedures, it is considered necessary to provide blood products for use in the perioperative period. Inconsistency in ordering can lead to products not being available when needed, or not being used when provided. In an effort to improve the efficiency of the blood product ordering process, this schedule has been created.

Note that the schedule should be used as a guide only and there may be situations where more or less than the recommended products are required. If in doubt, there should be discussion with the Surgeon and Anaesthetist involved with the case, and Blood Bank (ex. 9875).

Blood can be issued electronically within 5-10 minutes of any request, provided a group and antibody screen sample has been sent and processed. In situations where blood is needed immediately, O-Negative blood can be used until type-specific blood is available. The two main Theatre areas (R Block and Parson's Block) now keep a unit of O-Negative blood in their fridge.

For theatre use always order blood as adult units. However, if blood is being requested with a view to some being needed for postoperative 'top-up' transfusion and the patient is 5-kg or less, consider requesting one unit as a minipack.

### Burn Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Debridement & grafting	XM	2-4	Depends on burn percentage and patient age. Discuss with Anaesthetist
Grafting alone	G&S		

### Cardiac Surgery and Cardiac Catheter

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
All closed operations	XM	1	
All open operations: Neonates & infants	XM	3	FFP & platelets Replace 1 unit of FFP with cryoprecipitate in neonates
Older children	XM	4	CMV negative Consider need for irradiated products
All re-do operations (any age)	XM	4	FFP & platelets
Aortic balloon (under 1 year)	XM	1	
Aortopexy	XM	1	
Catheter - pre-op and diagnostic	G&S		Consider XM if antibodies present
Catheter - interventional	G&S		XM 1 unit if antibodies present
Chest drain	No G&S required		

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Closure of fenestration and dilation stent	XM	1	
PDA ligation	G&S		XM 1 unit if maternal antibodies present Use O Neg in an emergency

### Craniofacial Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Augmentation procedure via bicoronal flap	XM	2	Cell saver
Bipartition	XM	6	Cell saver
Calvarial bone grafting	XM	2	Cell saver
Calvarial remodelling	XM	2	Cell saver
Fronto Orbital advancement	XM	2	Cell saver
Implant procedure via bicoronal flap	XM	2	Cell saver
LeFort I	XM	2	Cell saver
LeFort II or III	XM	3	Cell saver
Mandibular distraction	XM	1	
Monobloc	XM	3	Cell saver
Remodelling procedure via bicoronal flap	XM	2	Cell saver
Vascular malformations	Discuss with SpR / Fellow		Cell saver
Vault expansion	XM	2	Cell saver

### Extra Corporeal Life Support (ECLS)

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
ECLS	XM	4	Inform Blood Bank at earliest opportunity. FFP (2 units) and platelets (1 unit) must be available at all times

### ENT Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
No general requirements for			



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X-matching in routine ENT surgery, although homozygous sickle +ve children may need blood for adenotonsillectomy			
Excision oro/nasopharyngeal tumour	XM	1	
FESS procedure	G&S		

General and Neonatal Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Adrenal tumour	XM	1	Double if bilateral
Central Venous Catheter	No G&S required		D/W Anaesthetist or Surgeon
Closure of stoma	G&S		XM 1 unit if patient <1 year old or Hb <10g/dl
Cystic hygroma	XM	1	
Diaphragmatic hernia	XM	1	
Duplication cyst	XM	1	
Duodenal atresia	G&S		
Exomphalos (small)	G&S		
Formation of stoma	G&S		
Fundoplication – open or laparoscopic	G&S		
Open re-do	XM	1	
Gastric/colonic interposition	XM	1-2	D/W Anaesthetist
Gastroschisis and exomphalos major	XM	1	
Gastrostomy - percutaneous	G&S		
Gastrostomy - open	G&S		
Intussuseption	XM	1	
Laparotomy - exploratory	G&S		XM 1 unit if an emergency or patient <1 year old
Malrotation (elective)	G&S		
Necrotising enterocolitis	XM	1	Coag screen ± FFP and platelets
Neuroblastoma	XM	1-2	Coag screen
Oesophageal atresia /TOF (Primary Repair)	XM	1	

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Pancreatectomy	XM	1	
PSARP	G&S		
PSARP minimal (low lesion)	G&S		
Pull Through Procedure For Hirschsprungs	G&S		
Pyloric stenosis	G&S		
Sacrococcygeal teratoma	XM	1	
Splenectomy	XM	1	G&S if laparoscopic
Volvulus	XM	1	

### Hepatobiliary Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Cholecystectomy	G&S		
Kasai	XM	1	
Laparotomy post-transplant	XM	1-2 units	May need FFP and platelets
Liver biopsy	G&S		
Liver Resection	XM	2 unit/10kg	Coag screen. May need FFP
Liver transplant: <20kg	XM	2	FFP, cryo, platelets (2 units of each) FFP, cryo, platelets (4 units of each) FFP, cryo, platelets (8 units of each) Cell saver
>20kg	XM	4	
>40kg	XM	8	
Re-do:			D/W Anaesthetist N.B. Consider CMV status of recipient
Liver & small bowel transplant: <10kg	XM	3	FFP, cryo, platelets (4 units of each) FFP, cryo, platelets (6 units of each) FFP (8 units), cryo, platelets (10 units each) Cell saver
10-20kg	XM	6	
>20kg	XM	8	
Re-do:			D/W Anaesthetist N.B. Consider CMV status of recipient
Small bowel transplant: <20kg	XM	2	2 units FFP 3 units FFP Cell saver
>20kg	XM	3	
Re-do:			D/W Anaesthetist N.B. Consider CMV status of recipient
Upper GI endoscopy ± banding ± sclerotherapy in an actively bleeding patient	XM	1	May need platelets and FFP as well

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Interventional Radiology

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Angioplasty	G&S		
TIPPS	G&S		May need platelets preop
Transjugular liver biopsy	G&S		May need platelets preop

Nephrology

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Renal angiogram	G&S		
Renal biopsy	G&S		
Renal transplant	XM	2	Coag screen

Neurosurgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Choroid plexus papilloma	XM	2	
Craniotomy	XM	1	
Craniotomy – posterior fossa	XM	2	Coag screen
Epilepsy grid except Sturge–Weber	G&S XM	1	
EVD insertion	G&S		
Hemispherectomy	XM	2	
Temporal lobectomy for Epilepsy	G&S		
IC-EC bypass	G&S		
Myelomeningocele	XM	1	Coag screen
Spine fixation/decompression	XM	1	
Spinal tumour	XM	2	Coag screen

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Other neurosurgical spines (including spinal chord untethering)	G&S		
V-P shunt under 5kg or Hb under 10g/dl	XM	1	
Other V-P shunt (including endoscopic procedures)	G&S		
3 <sup>rd</sup> ventriculostomy	G&S		

### Oncology

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
BM and trephine	No G&S		Platelets if count <25
Broviac/Hickman insertion	No G&S		May need platelets if count low

### Orthopaedic Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Acetabuloplasty	XM	1	Cell saver
Femoral osteotomy	G&S		
Hip reconstruction	XM	1	Cell saver
Ilizarov	G&S		
Nancy nail insertion	G&S		
Open reduction of hip	G&S		
Pelvic osteomies (DHH)	XM	1	Cell saver
Shelf procedure	G&S		

### Plastic Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume(mls)	Comments
Cleft lip repair	No G&S		
Cleft palate repair	No G&S		
Excision giant naevus	G&S		
Free flap	G&S		

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Pharyngoplasty	No G&S		
Vascular anomaly excision	G&S		

### Spinal Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume (mls)	Comments
Hemivertebrectomy	XM	1	Cell saver
Removal of metalwork	G&S		
Spine: Anterior and/or posterior	XM	2	Cell saver

### Thoracic Surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume (mls)	Comments
Nuss procedure	G&S		
Open thoracotomy	G&S		Coag screen and XM 1-2 units if empyema present.
Thoracoscopy	G&S		Coag screen and XM 1 unit if empyema present
Thoracic tumour excision	XM	1-2	Check coag screen & platelets

### Urological surgery

Procedure	Group & Save / Crossmatch (G&S/XM)	No of units / volume (mls)	Comments
AV fistula creation	G&S		
AV fistula revision	G&S		
Bladder augmentation	XM	1	
Bladder neck reconstruction	XM	1	
Cloaca	XM	1	
Epispadias	G&S		
Hypospadias (complex)	G&S		
Ileo-vaginoplasty	G&S		
Kelly procedure	XM	2	
Mitrofanoff	G&S		

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Nephrectomy - laparoscopic	G&S		
Nephrectomy - open	G&S		
Nephrostomy insertion	G&S		
Osteomies	G&S		
PCNL	G&S		
PD catheter insertion	G&S		
Pyeloplasty	G&S		
Reimplant	G&S		
Tumour nephrectomy	XM	1	Coag screen
Vascath insertion	G&S		
Wilm's	XM	1-2	Coag screen
Other tumour	XM	1	Coag screen

## **APPENDIX 11 - Guidelines on Transfer of Blood Products with the Patient (Neonatal & Cardiac)**

This practice is now discouraged due to problems guaranteeing the safe transfer of products and the need for them to be reissued once the patient has arrived at BCH. The following protocol has been agreed with the Cardiac Surgeons and Paediatric Surgeons for patients requiring transfer to BCH for surgery:

1. For the majority of patients blood products will not be transferred from the referring hospital.
2. Patients will go for surgery, with emergency blood transfusion requirements covered by the emergency O-negative blood available in Theatres.
3. If other blood products are required, a blood sample will need to be taken from the patient and sent to the Blood Transfusion Department (BTD). If less than 2mls is available a maternal sample should be sent as well.
4. If blood products are transferred with the patient, these must be sent straight to the BTD for reissue prior to administration.

If blood products are sent with the patient the following procedure should be followed:

1. The sending hospital will arrange the transfer of blood products through its own Blood Transfusion Department.
2. Blood Transfusion Department staff at the sending hospital will package the blood according to NHS Blood and Transplant guidelines for transportation of blood products to include a blood transfer form giving details of the product and the time at which it was packed.
3. The Blood Transfusion Department at the sending hospital will contact the receiving hospital's Blood Transfusion Department to inform of the impending arrival of blood products.
4. When the blood arrives at BCH a member of the receiving team will arrange its transfer to the Blood Transfusion Department and inform the Blood Transfusion Department staff.
5. Blood Transfusion Department staff will open the transfer container, check accompanying paperwork and release the unit if appropriate.

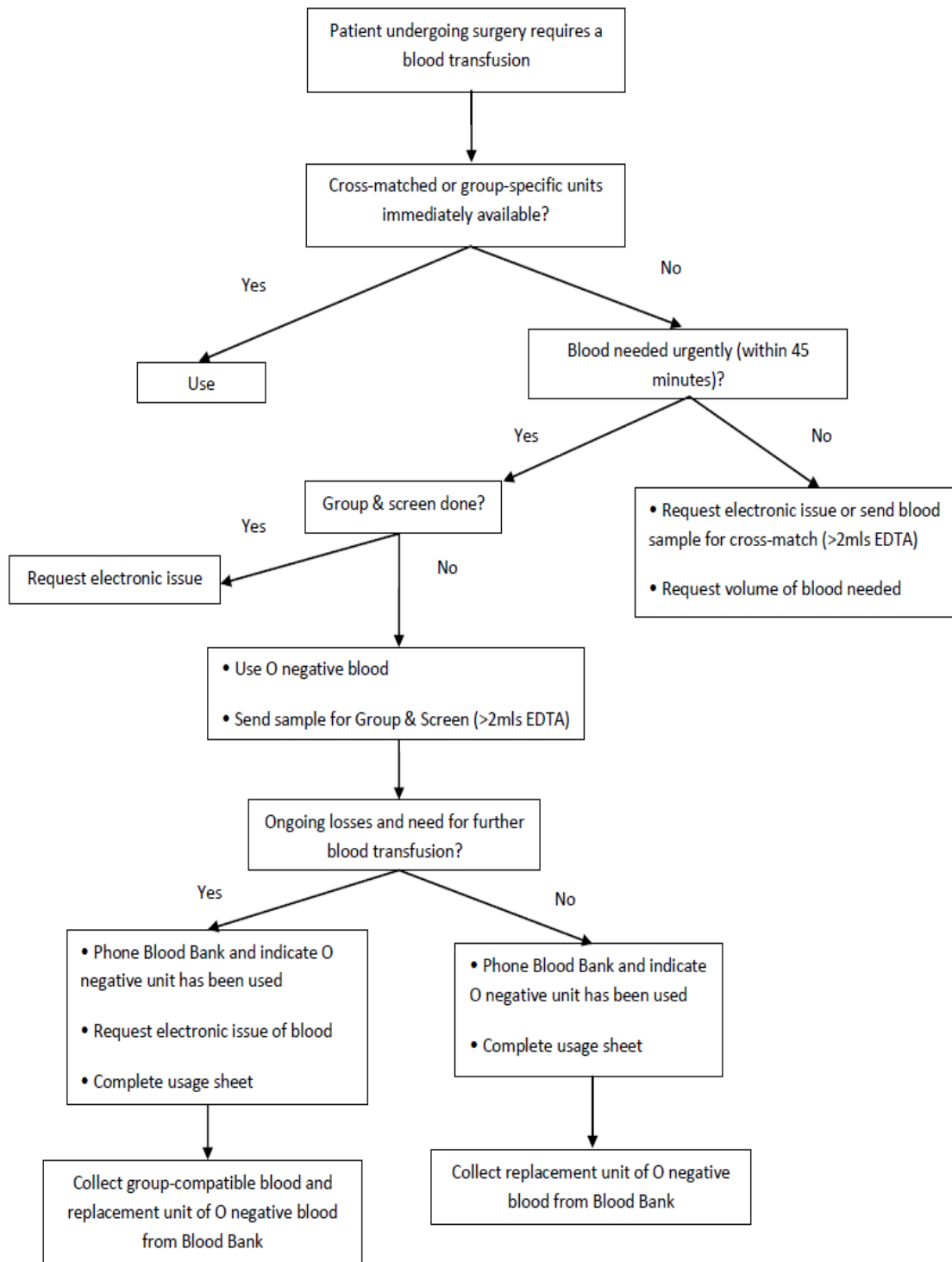
## APPENDIX 12 - Quarterly Training Report Process





## APPENDIX 13 - Emergency O Negative Blood Use in Theatres

Flow Chart for the Emergency Use of O Negative Blood in Theatres



## APPENDIX 14 - Guideline for Preadmission Patients Requiring Group & Screen Prior to Surgery

Patients attending the Preadmission Clinic who may require a blood transfusion in the perioperative period should have a sample taken for Group and Screen.

On admission to hospital, patients who have had a Group and Screen within the **previous month** can have blood issued electronically, as required, providing none of the following exclusions apply:

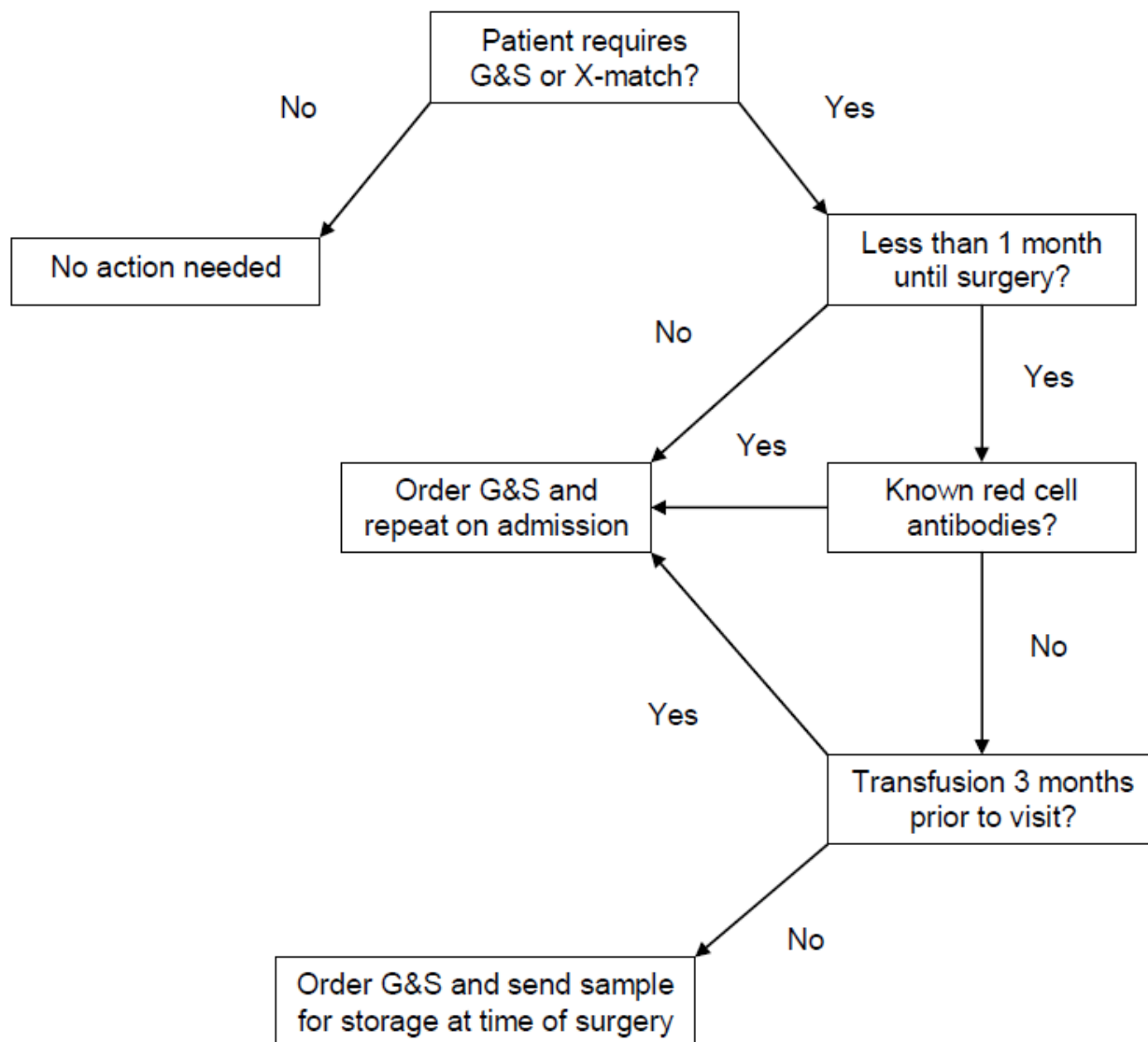
- They have a known antibody, which requires blood to be formally cross-matched prior to issuing
- They have received a blood transfusion less than three months prior to the preadmission clinic visit
- They have received a blood transfusion since the preadmission clinic visit and prior to admission
- They have had an episode of influenza, infectious mononucleosis, or mycoplasma pneumonia
- They have suffered other intercurrent illness, which has resulted in either hospital admission or a course of antibiotics being administered

If any of the above exclusions apply, the patient should have a repeat Group and Screen at the time of admission.

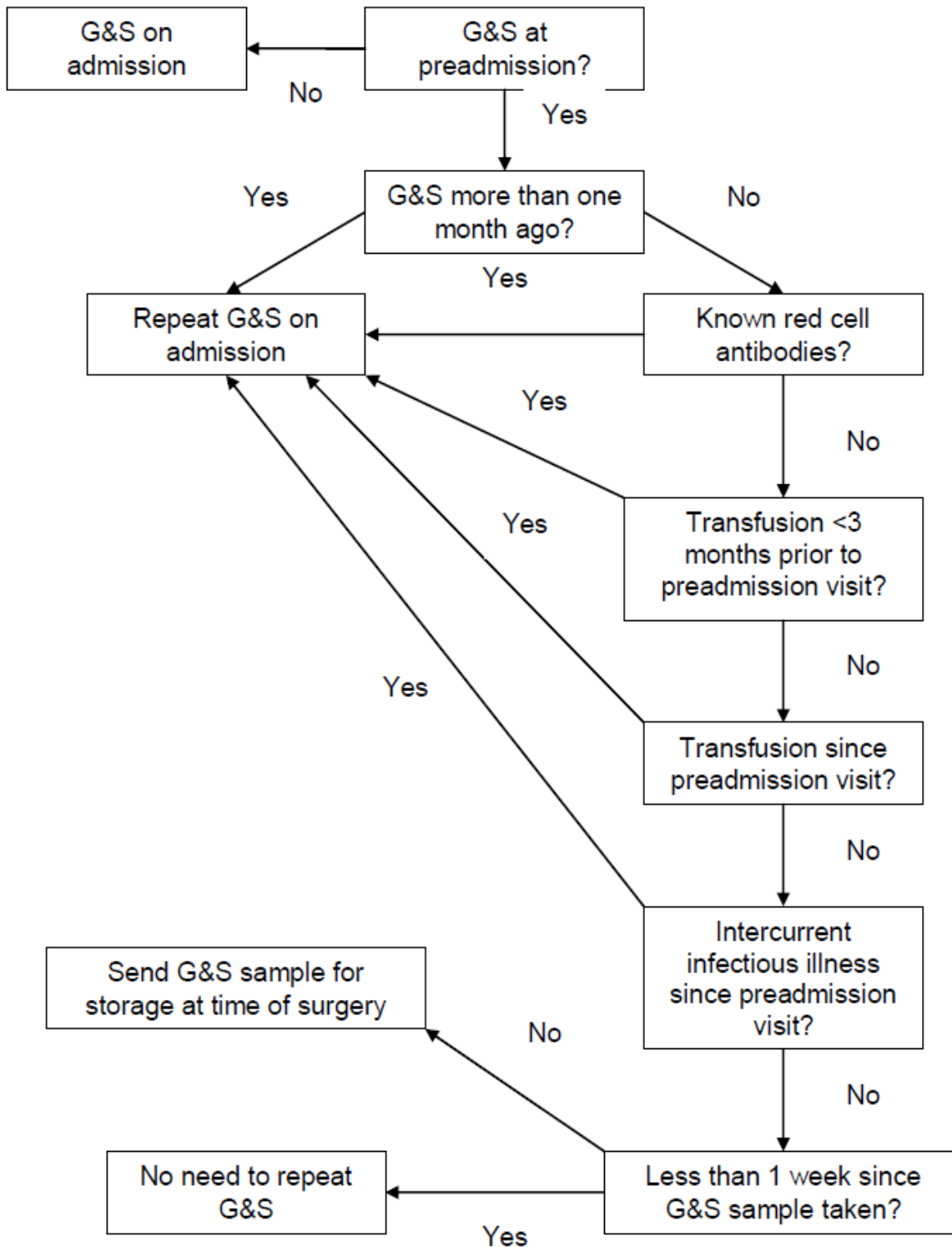
If it is more than 1 week since the original sample was taken, a repeat G&S sample should be taken at the time of surgery and sent to the Blood Bank, where it will be kept and used in the event of a suspected transfusion reaction.

Patients attending the Preadmission Clinic more than one month prior to the planned surgery should have a sample taken for Group and Screen at the time of their clinic visit, with a repeat sample at the time of admission for surgery, irrespective of the exclusions above.

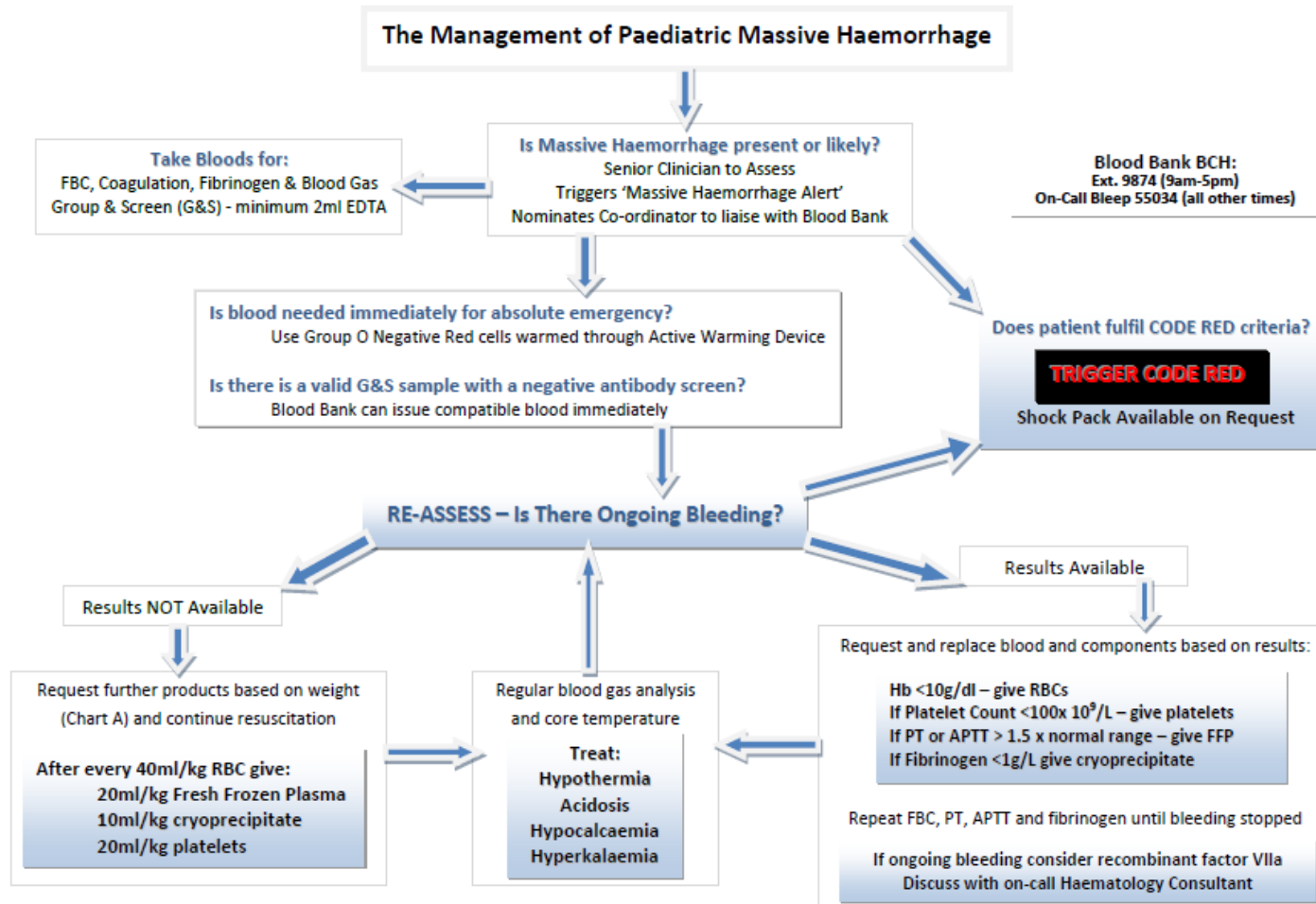
### Flow Chart – Preadmission



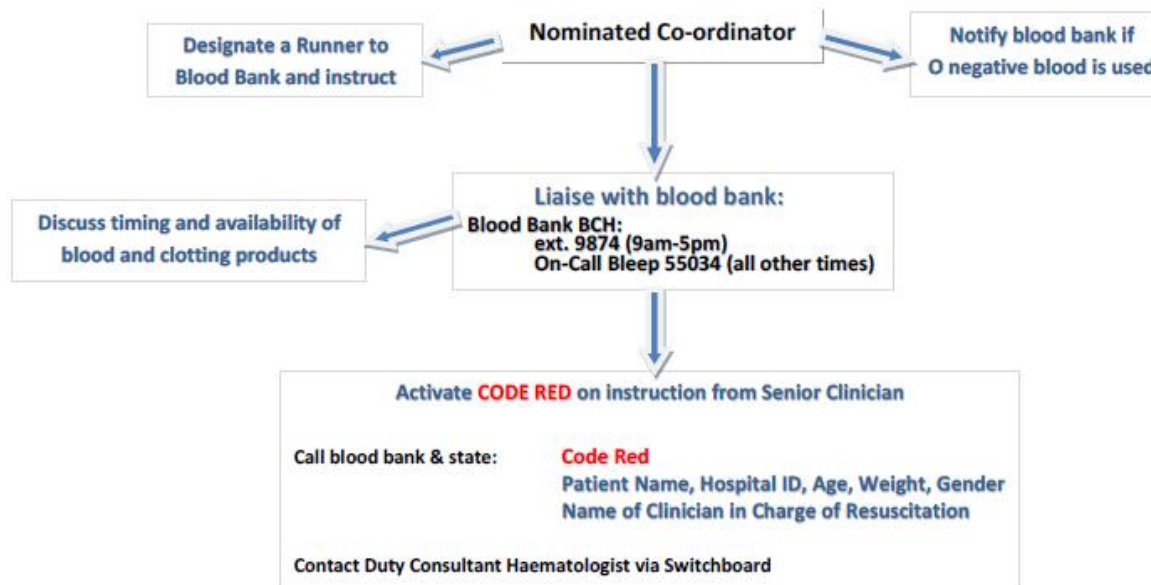
### Flow Chart – Hospital Admission



## APPENDIX 15 - The Management of Massive Haemorrhage



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**CODE RED Definition**

Consider if:

- ACTIVE HAEMORRHAGE SUSPECTED AND**
- >20ml/kg Red Cells given in 1 hr**
- >40ml/kg fluid given in 3 hr**
- >2mls/kg/min blood loss**

Code red activation enables release of 'shock pack' blood products i.e. red cells and FFP in 1:1 ratio with platelets and cryoprecipitate if available  
Blue light delivery of platelets can be requested if they are unavailable.  
In severe trauma red cells, FFP and Platelets can be given in 1:1:1 ratio

**Chart A**  
Blood Products to request by weight

	up to 10kg	10-20kg	20-50kg	over 50kg
Packed Cells	One Unit	Two Units	Three Units	Four Units
FFP	One Unit	Two Units	Three Units	Four Units
Platelets	One Unit	Two Units	Three Units	Four Units
Cryoprecipitate	Five Units	Eight Units	Twelve Units	Fifteen Units

**Appendix C – Policy Review Group Checklist for the Review and Approval of Procedural Document. To be completed by the Policy Review Group before ratifying any policy.**

	<b>Title of document being reviewed: Blood Administration Protocol</b>	<b>Yes/No/ Unsure</b>	<b>Comments</b>
<b>1.</b>	<b>State Title: Blood Administration Protocol</b>		
	Is the title clear and unambiguous?	Y	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Y	
<b>2.</b>	<b>Rationale</b>		
	Are reasons for development of the document stated?	Y	
<b>3.</b>	<b>Development Process</b>		
	Is the method described in brief?	Y	
	Are people involved in the development identified?	Y	
	Do you feel a reasonable attempt has been made to ensure relevant expertise has been used?	Y	
	Is there evidence of appropriate consultation with stakeholders and users?	Y	
<b>4.</b>	<b>Content</b>		
	Is the objective of the document clear?	Y	
	Is the target population clear and unambiguous?	Y	
	Are the intended outcomes described?	Y	
	Are the statements clear and unambiguous?	Y	
<b>5.</b>	<b>Evidence Base</b>		
	Is the type of evidence to support the document identified explicitly?	Y	
	Are key references cited?	Y	
	Are the references cited in full?	Y	

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	<b>Title of document being reviewed: Blood Administration Protocol</b>	<b>Yes/No/ Unsure</b>	<b>Comments</b>
	Are supporting documents referenced?		
<b>6.</b>	<b>Approval</b>		
	If appropriate have the joint Human Resources/staff side committee (or equivalent) approved the document?	N/A	
<b>7.</b>	<b>Dissemination and Implementation</b>		
	Is there an outline/plan to identify how this will be done?	Y	
	Does the plan include the necessary training/support to ensure compliance?	Y	
<b>8.</b>	<b>Document Control</b>		
	Does the document identify where it will be held?	Y	
	Have archiving arrangements for superseded documents been addressed?	Y	
<b>9.</b>	<b>Process to Monitor Compliance and Effectiveness</b>		
	Are there measurable standards or KPIs to support the monitoring of compliance with and effectiveness of the document?	Y	
	Is there a plan to review or audit compliance with the document?	Y	
<b>10.</b>	<b>Review Date</b>		
	Is the review date identified?	Y	
	Is the frequency of review identified? If so is it acceptable?	Y	
<b>11.</b>	<b>Overall Responsibility for the Document</b>		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Y	



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<b>Policy Review Group Approval</b>			
If you are happy to approve this document, please sign and date.			
<b>Committee Approval</b>			
If the committee is happy to approve this document, please sign and date it and forward copies to the person with responsibility for disseminating and implementing the document and the person who is responsible for maintaining the organisation's database of approved documents.			
Name		Date	
Signature			

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**Appendix D – Equality Impact Assessment**

To be completed and attached to any procedural document when submitted to the Policy Review Group for consideration and approval.

**EQUALITY IMPACT ASSESSMENT FORM**

**SECTION 1:**

<b>Department</b> Blood Transfusion		<b>Assessor:</b> Sarah Cross
<b>Policy/ Service Title:</b> Blood Administration Protocol		<b>Date of Assessment:</b> 15/07/2011
1. Describe the purpose of this policy or function	To promote safe and appropriate blood transfusion practice across the Trust.	
2. Who is affected by this policy?	All clinical staff who are involved in the blood transfusion process. All infants, children and young people involved in the blood transfusion process.	
3. What are the outcomes or intended outcomes of this policy/ function?	To promote a safe and effective standardised approach to blood transfusion practice.	
4. What consultation has been undertaken during the development of this policy/function?	Review by the Hospital Transfusion Team and the Hospital Transfusion Committee.	
5. What information or evidence has been used to assess the potential impact across the equality strands?	Comments were sought from the Hospital Transfusion Team and the Hospital Transfusion Committee. The protocol complies with current standards and recommendations.	

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<b>IMPACT</b>		
<p>1. What is the impact or likely impact, either positive or negative, of the initiative on individuals, staff, or the public at large? The Blood Administration Protocol will promote a standardised approach to blood transfusion practice across the Trust.</p>		
<p>2. Please complete the following list and identify if there is, or likely to be, an impact on a group</p>		
a) Grounds of race, ethnicity, colour, nationality or national origins.	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Adverse? <input type="checkbox"/> Provide further details:
b) Grounds of sexuality or marital status	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Adverse? <input type="checkbox"/> Provide further details:
c) Grounds of gender	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Adverse? <input type="checkbox"/> Provide further details:
d) Grounds of religion or belief	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Adverse? <input type="checkbox"/> Provide further details:
e) Grounds of disability	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Adverse? <input type="checkbox"/> Provide further details:
f) Grounds of age	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Adverse? <input type="checkbox"/> Provide further details:
<b>If you have stated that there is an adverse impact a Full Impact Assessment is Required. Complete Section 2.</b>		

**SECTION 2:**

<b>Modifications</b>
1. If you stated that the policy/ function has or could have an adverse impact on any group, how could you modify it to reduce or eliminate any identified negative impacts?
2. If you make these modifications, would there be an impact on other groups, or on the ability of the policy to achieve its purpose?
<b>Consultation</b>
<b>Under the Race Relations (Amendment) Act 2000 you are required to consult on the impact of new policies, functions and service change.</b>
3. How do you plan to consult on these modifications? Specify who would be involved, timescales and methods.

<b>Decision Making</b>
1. Who will make the decision?
2. What is the decision? <input type="checkbox"/> Reject the policy/ function <input type="checkbox"/> Introduce the policy/ function <input type="checkbox"/> Amend the policy/ function <input type="checkbox"/> Other (Please explain)

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**Monitoring and Review**

1. How will the implementation of the policy/ function and its impact be monitored?

2. What are the overall learning points from this assessment?

3. What actions are recommended from this assessment?

4. When is the review date?

For advice in respect of answering the above questions, please contact the Equality and Diversity Officer on Ext: 8611. A completed form must be returned with your procedural document.

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**Appendix E – Plan for Dissemination of Procedural Documents**

To be completed and attached to any document which guides practice when submitted to the Policy Review Group for consideration and approval.

<b>Title of document:</b>	Blood Administration Protocol		
<b>Date finalised:</b>	May 2011	<b>Dissemination lead: Print name and contact details</b>	Oliver Bagshaw <a href="mailto:oliver.bagshaw@bch.nhs.uk">oliver.bagshaw@bch.nhs.uk</a>
<b>Previous document already being used?</b>	<b>Yes / No</b> (Please delete as appropriate)		Ext 9633
<b>If yes, in what format and where?</b>	Stored in the "Clinical Policies" section on the Trust Intranet.		
<b>Proposed action to retrieve out-of-date copies of the document:</b>	Intranet development team to remove the old copy and replace it with the new version. Ward/Department Managers will be responsible for replacing the existing policy with this one.		
<b>To be disseminated to:</b>	<b>How will it be disseminated, who will do it and when?</b>	<b>Paper or Electronic</b>	<b>Comments</b>
All clinical staff.	Document to be stored on the Trust Intranet under "Clinical Policies" and on the Blood Transfusion Intranet folder. Information about the new policy will be advertised via the Trust e-memo. Emails to be sent to Consultants, Ward Managers and Band 7 Nurses informing them of the policy launch.	Electronic	

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**Dissemination Record – to be used once document is approved.**

<b>Date put on register / library of procedural documents</b>		<b>Date due to be reviewed</b>	
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<b>Disseminated to: (either directly or via meetings, etc)</b>	<b>Format (i.e. paper or electronic)</b>	<b>Date Disseminated</b>	<b>No. of Copies Sent</b>	<b>Contact Details / Comments</b>

## Appendix F – Summary of Significant Changes to previous version of Policy

Policy Title	Blood Administration Protocol		
Version	Date	Author	Comment (Identify any significant changes to the procedural document)
5.0	May 2011	Hospital Transfusion Team	<ul style="list-style-type: none"> <li>▪ Pg 8. Changes to the recommended calculation for calculating the volume of red cells to be transfused.</li> <li>▪ Pg 12. Information added with reference to pre-collection checks.</li> <li>▪ Pg 17. Clarification of how long a unit of blood can be left out of temperature controlled storage conditions before it is either transfused or returned to the blood fridge.</li> <li>▪ Pg 17. Change in how long an administration set can be used for a blood transfusion.</li> <li>▪ Pg 19. Clarification of documentation required during a blood transfusion. Recommendations of documentation required during intra operative transfusions.</li> <li>▪ Pg 20. Instructions for returning the Blood Compatibility Label (Blood Tag) to Blood Bank.</li> <li>▪ Pg 21. Updated information on thawing and transfusion of frozen blood products.</li> <li>▪ Pg 21. Information on Point of Care testing.</li> <li>▪ Pg 24. Updated information on the transfer of blood products.</li> <li>▪ Pg 24. Training requirements updated.</li> <li>▪ Pg 25-26. Monitoring requirements and key performance indicators information updated.</li> <li>▪ Pg 31. Updated information on the use of irradiated blood products.</li> <li>▪ Pg 34. Updated information on top-up transfusions for neonates.</li> <li>▪ Pg 47. Updated guidelines on the transfer of blood products.</li> <li>▪ Pg 49. Guidelines for the use of emergency O-neg blood in Theatres.</li> <li>▪ Pg 50. Guidelines for pre-admission patients requiring Group and Screen prior to surgery.</li> <li>▪ Pg 53-54. Management of major haemorrhage guideline.</li> </ul>