East Kent Hospitals University
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POLICY

Blood Transfusion

Version:	6.0
Author:	EKHUFT Transfusion Practitioner Team
Approving committee:	Patient Safety Committee
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Applies to (include subsidiary companies):	Patients & staff of EKHUFT Patients & staff of community hospitals, private/ independent organisations or hospices served by EKHUFT.

Version Control Schedule

Version	Date	Author	Status	Comment
5.0	December 2014	Hospital Tx Team	Superseded	Re-write
5.1	February 2016	Hospital Tx Team	Superseded	Amendments made 1. Addition of Chart 1 – Blood Group Compatibility Chart 2. Note added to Section 9 – Fresh Frozen Plasma
6.0	July 2019	EKHUFT Transfusion Practitioner Team	Final	

Policy Reviewers

Name and Title of Individual	Date Consulted

Name of Committee	Date Reviewed
Hospital Transfusion Team (HTT)	July 2019
Hospital Transfusion Committee (HTC)	Sept 2019
Patient Safety Committee	02 October 2019

Summary of Key Changes from Last Approved Version

- Section 2.4: Added a line to say that the hospital transfusion team is responsible for reporting to SHOT or the MHRA via the Serious Adverse Blood Reaction Events website.
- Section 6.9.2: Addition; Following an incident where the wrong product was collected due to multiple component types being on one blood collection / traceability sheet a change has been added that there is to be one traceability sheet used per different component being collected and transfused.

- Section 6.16.5: Following an incident regarding the transfer of a patient with blood and blood components a section has been added giving information on the packing and correct procedure of transferring a patient with blood components.
- Section 6.20: Addition of information relating to recurrent transfusion reaction – this is a new section added to the transfusion reaction section on how to manage transfusions in patients who regularly react
- Section 6.22: New tool for transfusion reactions replaces BSH flowchart in previous policy
- Section added Use of granulocytes: Granulocytes are rarely ordered or used within EKHUFT. It was highlighted following a patient requiring granulocytes that this was an omission in the policy and therefore a section has been added giving details on the correct administration for clinical staff.
- NICE guidance has been included within this review.
- The Use of Irradiated blood components has been replaced with Patient Special Requirements section

Associated Documentation

EKHUFT Policies:

Positive Patient Identification
Patient Escort and Transfer Policy

EKHUFT Guidelines:

The Management of Women who Decline Blood Products
Anti-D Administration
Exchange Transfusion (Neonatal)
Management of oral anticoagulant therapy (Warfarin and Sinthrome only)
Administration of Blood within Ambulatory Care/Day Hospital Setting
Provision of Intra-Operative Cell Salvage
Post-Operative Collection and Re-Infusion of Autologous Blood
Guideline for Patients Who Decline Blood and Blood Components

EKHUFT Protocols:

Blood Transfusion notice: BLT-NO- 140
Blood Transfusion on Dialysis Protocol
Plasma Exchange Protocol

Contents

1. Policy Description

1.1. The East Kent Hospitals University NHS Foundation Trust (EKHUFT) Blood Transfusion Policy will address prescribing, requesting, collecting and administering blood components/products to support EKHUFT staff in the delivery of a safe blood transfusion service to patients of EKHUFT, including those transfused at a community hospital, private/ independent organisation or hospices served by EKHUFT.

2. Introduction

2.1. Transfusion can save lives and plays an essential part in the treatment of some conditions. However, transfusion should only be prescribed when absolutely necessary. The decision to transfuse any component to a patient should only be made after careful consideration of the risks versus benefits.

2.2. Some of the risks associated with transfusion of blood components/products include:

2.2.1. Transfusion reactions (acute or delayed) e.g. allergic/anaphylactic or haemolytic;

2.2.2. Transfusion Related Acute Lung Injury (TRALI);

2.2.3. Transfusion Associated Circulatory Overload (TACO);

2.2.4. Transmission of Infection;

2.2.5. Risks associated with human error e.g. ABO incompatibility;

2.2.6. Alloimmunisation.

2.3. EKHUFT actively promote the consideration and use of alternatives to transfusion where appropriate. e.g. iron therapy, immunoglobulins and autologous transfusion.

2.4. The aim of this policy is to ensure that transfusions provided are safe, appropriate and managed accordingly in order to minimise adverse events. Procedures must be followed to ensure that the correct component/product is given to the correct patient, that the transfusion is appropriate and justifiable and that any adverse reactions are dealt with promptly and efficiently. Non-conformances, adverse events or reactions are reported via DATIX and where appropriate. Those that require externally reporting to either Medical and Healthcare Products Regulatory Agency (MHRA) and/or Serious Hazards of Transfusion (SHOT) are reported by the Hospital Transfusion Team via SABRE (Serious Adverse Blood Reactions & Events).

2.5. The contents of this policy are based on national and international guidelines on blood transfusion practice, namely the National Institute for Health and Care Excellence (NICE) Guidelines (NG 24, 2015), NICE Quality Standards (QS 138) and British Standards in Haematology (BSH) guidelines. Requirements set out by the Blood Safety and Quality regulations (BSQR) in 2005 and NHS Litigation Authority (NHSLA) are also taken into account.

3. Definitions/Glossary

A&E	Accident & Emergency
ARDS	Acute Respiratory Distress Syndrome
BMS	Biomedical Scientist
CMV	Cytomegalovirus
CRYO	Cryoprecipitate
DIC	Disseminated Intravascular Coagulation
E&Cr	Electrolytes & Creatinine
FBC	Full Blood Count
FFP	Fresh Frozen Plasma
Hb	Haemoglobin
HCA	Health Care Assistant
HDFN	Haemolytic Disease of the Newborn
HIT	Heparin Induced Thrombocytopenia
HIV	Human Immunodeficiency Virus
HLA	Human Leukocyte Antigen
HTC	Hospital Transfusion Committee
ID	Identification
IUT	Intra-Uterine Transfusion
MHP	Major Haemorrhage Policy
MHRA	Medicines and Healthcare Products Regulatory Agency
NHSBT	NHS Blood and Transplant (National Blood Service)
NICE	National Institute for Health and Care Excellence
ODP	Operating Department Practitioner
Plt(s)	Platelet(s)
PCC	Prothrombin Complex Concentrate
POCT	Point of Care Testing
PTP	Post Transfusion Purpura
SABRE	Serious Adverse Blood Reactions and Events

SCBU	Special Care Baby Unit
SHOT	Serious Hazards of Transfusion
TACO	Transfusion Associated Circulatory Overload
TAGVHD	Transfusion Associated Graft versus Host Disease
TP	Transfusion Practitioner
TRALI	Transfusion Related Acute Lung Injury
TTP	Thrombotic Thrombocytopenic Purpura
VIP	Visual Infusion Phlebitis score

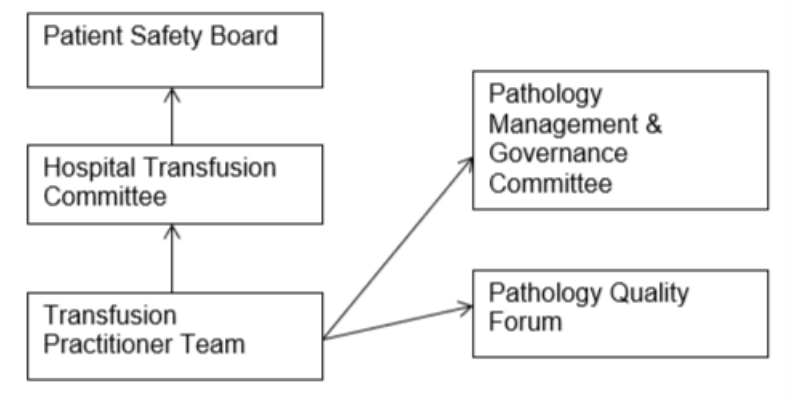
4. Purpose and Scope

4.1. This policy is applicable to all health care professionals caring for patients within EKHUFT. The policy applies to all staff involved in the transfusion process. The policy covers aspects of the clinical process including blood sampling, requesting, prescribing, and administration, monitoring of patients and managing reactions.

5. Duties

5.1. **The Blood Transfusion Committee** is a multidisciplinary group with membership from Pathology, Clinical Care Groups and external service users. The duties of the committee are detailed in its terms of reference and includes policy development and implementation.

Figure 1: Blood Transfusion Governance Structure



5.2. **Blood Transfusion Team**

5.2.1. The Blood Transfusion Team consists of one Trust Wide Blood Transfusion Co-ordinator and three acute site-based Blood Transfusion Practitioners.

5.2.2. The remit of the team is to promote and support safe blood transfusion practice in the clinical areas in line with national and local guidelines.

5.3. **The End User**

5.4. The end user may be a professionally registered and/or qualified health care professional, or a support worker. All end users must ensure that they are appropriately trained and assessed as competent in accordance with their role in the blood transfusion process. It is the responsibility of the end user to follow all procedures detailed in blood transfusion policy.

6. The Transfusion Process

6.1. If a clinical decision has been made to transfuse, for the purposes of this policy it should be assumed that all possible alternatives have been explored. For patients undergoing elective procedures who have sub-optimal haemoglobin levels, efforts must have been made to optimise the patient's haemoglobin using oral iron or intravenous iron therapies. Optimising patient haemoglobin levels to avoid transfusion and exploring alternatives to blood components is recommended in the NICE guidelines (NG24, 2015). In order to minimise potential blood component use, it is also recommended in the NICE guideline (NG24, 2015) that patients at moderate to high risk blood loss risk during surgery should be offered tranexamic acid.

6.2. **Informed Consent**

6.2.1. For elective cases and planned transfusions, the need for transfusion must be discussed with the patient or legal guardian at the earliest opportunity. In accordance with the NICE guidelines (NG24, 2015), applicable patient information leaflet should be made available to the patient/legal guardian. Supplies of this leaflet and others related to blood transfusion can be obtained from the Blood Transfusion Laboratory or Transfusion Practitioner and should be available in all relevant clinical areas. They are also available for clinical areas to order directly on-line. Please ask the site Transfusion practitioner for details.

6.2.2. Discussion should include:

6.2.2.1. Risks and benefits of transfusion;

6.2.2.2. Indications of transfusion;

6.2.2.3. (Where applicable) alternatives to blood transfusion e.g. Iron, autologous drains, cell salvage;

6.2.2.4. Transfusion history, including whether the patient carries a blood group/antibody card.

6.2.2.5. The reason (justification) for transfusion and that informed consent has been obtained must be documented in the patient's healthcare record. If

the patient later experiences a transfusion related reaction or event, the records clearly show the appropriateness of components transfused.

6.2.3. Making provisions for patients refusing transfusion support is to be discussed with the Consultant responsible for the patient's care.

6.2.4. If the patient is unconscious or confused, the clinician responsible for the patient's care must decide whether a transfusion is necessary and appropriate.

6.3. Requesting blood components/products

6.3.1. All requests must be completed on AllScripts (electronic Patient Administration System). Forms must be printed and sent to the laboratory. Hand written forms are only to be used if Allscripts is unavailable in the clinical area.

6.3.2. When using Allscripts for ordering blood components/products (other than red cells), choose the 'blood component' option under blood transfusion and additional choices will be visible.

6.3.3. Request forms must be marked with the appropriate priority status (routine or urgent). This will allow effective prioritisation of laboratory workload.

6.3.4. All requests for the provision of urgent or emergency blood components/products should also be telephoned to the Blood Transfusion Laboratory.

6.3.5. Request for Group & Save (G&S): A member of staff who has attended an introductory Blood Transfusion training session, has completed mandatory annual updates and has in date competency can request a G&S.

6.3.6. Request for individual blood component/products: Medical staff and specialist nurses who work to nursing protocols approved by the HTC may request blood for cross matching.

6.3.7. Staff authorised to make requests must:

6.3.7.1. Check with the patient whether they have received a previous transfusion;

6.3.7.2. Check with the patient if they carry a blood group card stating red cell antibodies are present;

6.3.7.3. Check if there are special requirements for blood components e.g. irradiated, pregnant;

6.3.7.4. Detail the presence of any clinically significant antibodies previously reported;

6.3.7.5. Complete all fields on the request form;

6.3.7.6. If using handwritten request forms, addressograph labels***** may be used;

6.3.7.7. Where applicable, follow the standard blood order schedule (BLT-NO-140);

6.3.7.8. Sign and date the request form;

6.3.7.9. Ensure the correct requestor name and contact details are on the request form.

6.4. Obtaining a G&S/cross match sample

6.4.1. Incorrect patient identification or incorrect sample labelling may lead to ABO incompatible transfusions and cause significant harm to patients.

6.4.2. All in-patients/day patients must have an identification bands printed from AllScripts (Renal patient may have personal identification cards). Patient identification must contain the patient's full name, date of birth and a unique patient identification number. [Refer to Positive Patient Identification policy]

6.4.3. If an identification band is removed for any reason, it is the responsibility of the person removing it to replace it, ensuring that all patient details are correct.

6.4.4. The individual taking the G&S/cross match sample must:

6.4.4.1. Always bleed one patient at a time;

6.4.4.2. Print/obtain all request forms;

6.4.4.3. At the patient side check all identification details on all request forms match those on the ID band and verbally with the patient where possible;

6.4.4.4. All samples must be labelled immediately at the bedside by hand by the individual who took the samples;

6.4.4.5. The labelled sample must have identical information to that on the patient's identification band - full name, full date of birth and identification number. Samples must be labelled, signed, timed and dated by the person taking the samples.

6.4.5. If there is any doubt whether the correct phlebotomy process has been followed, samples may be rejected in order to maintain patient safety.

6.5. Transportation of the sample to the laboratory

6.5.1. In all cases, transportation of samples to the laboratory must take place without delay using the services of a porter or the vacuum tube transport system.

6.6. Sample Validity

6.6.1. G&S samples may be stored in the Blood Transfusion Laboratory and used to provide red cells at a later date. Sample validity times are highlighted below:

Patient History	Period sample valid for use
Patient transfused or pregnant in the last 3 months	Up to 3 days*
Patient not transfused and not pregnant in the last 3 months	Up to 7 days*

**this is the time period between the sample being taken and subsequent transfusion*

Table 1 – Information taken from the BSH guideline 'Pre-Transfusion Compatibility Procedures in Blood Transfusion Laboratories' (2012)

6.7. Electronic Issue of Red Cells

6.7.1. EKHUFT Blood Transfusion Laboratories can electronically issue (EI) red cells to patients. EI is the selection and issue of red cell units without the undertaking of serological crossmatching between donor and recipient. Due to there being no serological testing, EI can be instantaneous.

6.7.2. MHRA and the BSH Guideline for Pre-Transfusion Compatibility Procedures in Blood Transfusion Laboratories (2012) provide guidance for laboratories undertaking EI.

6.7.3. Patients must have a confirmatory G&S sample sent to the blood transfusion laboratory in order to facilitate the provision of blood components in line with Table 1 above. These samples must be obtained during two separate phlebotomy events whereby positive patient identification is undertaken for each sample independently. This does not dictate that two samples must be taken each time a transfusion is required. At least one of the samples must be in date in accordance with Table 1 above, the other can be from a previous testing. A patient previously unknown to EKHUFT will require two samples taken.

6.7.4. The majority of patients will be eligible for EI but there will be patients for whom it is not appropriate. For all EI queries please contact and discuss patient requirements with the Blood Transfusion Laboratory staff.

6.7.5. Note: If there is any doubt relating to how the two samples were obtained repeat samples will be requested and may delay the provision of red cells. Deviation from the criteria set in this policy compromises patient safety and will be investigated.

6.8. Prescribing Blood Components/Products

6.8.1. Blood components are prescribed on the back of the patient's medication chart. Before prescribing, the prescriber should consider the following:

6.8.1.1. The patient's overall clinical condition, including underlying disorders;

6.8.1.2. Appropriate clinical indications e.g. blood loss, prophylaxis or symptomatic anaemia;

6.8.1.3. Appropriate alternatives to blood components;

6.8.1.4. The patient's weight and volume required/volume in a unit;

6.8.1.5. Rate of transfusion. This will depend on the condition of the patient. Consider risk of overload;

6.8.1.6. Previous transfusion history including any adverse reactions;

6.8.1.7. As stated in the NICE guidelines (NG24, 2015), it is recommended the patients are transfused one unit at a time. Patients are to be clinically reviewed and have a check haemoglobin performed (laboratory or POCT sample) prior to further transfusion.

6.8.2. If there is doubt about the request, the requestor may be contacted by laboratory staff and referred to a Haematologist.

6.8.3. The prescription must include:

6.8.3.1. Surname;

6.8.3.2. First name;

6.8.3.3. Date of birth;

6.8.3.4. Gender;

6.8.3.5. Patient identification number;

6.8.3.6. Quantity/volume of blood components/products to be administered;

6.8.3.7. Blood component/product to be administered;

6.8.3.8. Rate and mode of delivery of each unit;

6.8.3.9. Special requirements (e.g. CMV negative, irradiated);

6.8.3.10. Special instructions, e.g. medication required before/during transfusion.

6.9. Collection of Blood Components/Products

6.9.1. Prior to collection of blood components/products, clinical staff must ensure that:

6.9.1.1. The patient is on the ward;

6.9.1.2. It is deemed a safe time to proceed with a routine transfusion (consider other activities on the ward and surrounding the individual patient);

6.9.1.3. It is a national recommendation that routine transfusions do not take place overnight. Only if clinically essential should a transfusion be given between the hours of 00.00 and 06.00;

6.9.1.4. Patient has given verbal, informed consent;

6.9.1.5. Patient is wearing an identification band;

6.9.1.6. Venous access is adequate to cope with the amount and rate of transfusion required. Universal guidelines for cannula sizing should be used;

6.9.1.7. An intravenous cannula that is already sited is still patent and the surrounding area is not red or painful and a visual infusion phlebitis score (VIP) score has been undertaken;

6.9.1.8. Prescription has been completed and accompanying documentation in the healthcare records includes justification and consent for transfusion;

6.9.1.9. Pre-transfusion observations have been completed – temperature, blood pressure, respiration rate and pulse. These observations are to be recorded no more than 60 minutes prior to commencement of transfusion.

6.9.2. A traceability form must then be completed. A stock of these is found in transfusing clinical areas. Additional stock is obtained from Pathology/Blood Transfusion Laboratory. Addressograph labels are recommended. A separate traceability form must be used for each different component type required and must include the following:

6.9.2.1. Patient’s full name;

6.9.2.2. Date of birth;

6.9.2.3. Patient identification number;

6.9.2.4. What is required to be collected e.g. red cells, platelets, FFP;

6.9.2.5. Number of units required to be collected (not the total number of units prescribed);

6.9.2.6. Location of patient/transfusion;

6.9.2.7. The person requesting collection must sign, date and time the traceability form in the ‘ordered by’ section.

6.9.3. The traceability form is EKHUFT’s method of complying with the legal requirement to trace blood components from donor to final fate. It is paramount that this documentation is complete and is the responsibility of the clinical area. When the transfusion is complete, this form MUST be returned to the Blood Transfusion Laboratory ideally within 48 hours. Failure to so may result in a non-conformity with the BSQR’s and will be reported via the incident reporting system (Datix).

6.10. Collection Process

6.10.1. Primarily this task will be undertaken by portering staff but other staff may collect if they have in-date training and have been competency assessed by the Transfusion Practitioner Team or agreed assessor.

6.10.2. One unit should be collected at a time unless it is a clinical emergency or if all components / products are being immediately transfused (e.g. FFP and albumin).

6.10.3. The collector must obtain a traceability form and transport box from the clinical area before going to the blood transfusion laboratory/storage facility. In circumstances where more than one unit is to be collected, a transport box with cool packs where appropriate will be obtained from the laboratory.

6.10.4. The collector will use the details on the traceability form to carry out patient identification checks and component/product checks.

6.10.4.1. **Patient identification checks** - Patient’s full name, date of birth and identification number is checked against the traceability form, the blood transfusion register form and the unit label attached to the component/product.

6.10.4.2. **Component/product checks** - Pack number, expiry date, component/product type must be checked on the unit and on the blood transfusion register form. If there are any patient identification or unit detail discrepancies, the component/product must not be removed from the storage facility and advice must be sought from Blood Transfusion Laboratory staff.

6.10.5. Upon delivery to the clinical area, a member of staff must check the unit thoroughly and sign for receipt. The collector must remain with the unit until this is completed. At no point must the blood component/product be left unattended.

6.11. Returning unused blood components/products

6.11.1. If a blood component is no longer required or unable to be commenced immediately following delivery to the clinical area, it should be returned to the storage facility within 30 minutes of the collection time.

6.11.2. If significant delays occur and the unit is returned beyond 30 minutes from collection, the Blood Transfusion Laboratory staff must be informed and the component dealt with accordingly. Please communicate with the Blood Transfusion Laboratory staff regarding re-collection as this will be dependent on the component being returned within or beyond the 30 minutes.

6.11.3. All component/products being returned must be signed back into the storage facility on the blood transfusion register form.

6.12. Checks Prior to Administration of Blood Components/Products

6.12.1. The pre-administration checks must be performed at the patient's bedside by two staff members. These may be:

6.12.1.1. Two registered practitioners (e.g. Nurse/ODP/Midwife).

6.12.1.2. One registered practitioner and one non-registered staff member (minimum NVQ level 2).

6.12.2. All staff performing the pre-administration checks must have in date blood transfusion e-learning, training and be competency assessment.

6.12.3. All agency staff must undertake a blood transfusion competency assessment before checking or administering blood components/products.

6.12.4. The following MUST be checked for every blood component/product prior to administration:

6.12.4.1. Patient Identification: Surname, first name, date of birth and identification number must be checked against;

6.12.4.2. The patient verbally - ask patients who can communicate to state their surname, first name and date of birth;

6.12.4.3. The ID band (if inaccessible, WHO checklist for theatre, or approved ID card);

6.12.4.4. The compatibility tag attached to the blood component/product;

6.12.4.5. The pink traceability form;

6.12.4.6. The prescription chart.

6.12.5. Where possible, patients are to be asked to confirm any knowledge of requiring special blood e.g. carry a blood group/antibody card, carry an irradiated blood required card, have clinically significant antibodies or history of stem cell or bone marrow transplant/chemotherapy or are pregnant.

6.13. Blood Component/Product Checks

6.13.1. Check the component/product matches that prescribed;

6.13.2. Check the donation number on the compatibility tag matches that on the blood product;

6.13.3. Check that the ABO and RhD group on the unit label and on the compatibility tag are compatible;

6.13.4. Sometimes the blood group of the component differs from the patient's blood group. If there is any doubt over compatibility, please refer to chart 1 below 'Blood Group Compatibility Chart' or contact Blood Transfusion Laboratory staff PRIOR to administration;

6.13.5. Expiry date on the unit. No blood component/product is to be transfused after the expiry date on the pack. The time of expiry is always midnight on the date unless otherwise stated;

6.13.6. Leakage from the pack must not be evident;

6.13.7. Signs of contamination e.g. particulate matter or discoloration of red cells, must not be present.

6.13.8. If any discrepancies are found during the pre-transfusion checking procedure, the blood component/product must not be administered. The Blood Transfusion Laboratory staff must be informed and action taken accordingly.

6.14. Unknown patients

6.14.1. For unknown patients, samples must be labelled with unknown forename, unknown surname, the unique identifying number allocated upon arrival, date / time and signed. Blood components/products will be issued with the same 'unknown' identification as provided on the samples.

6.14.2. The Blood Transfusion Laboratory must be informed of any new information relating to patient identification. Blood component/products will be re-issued using the new patient identification.

6.14.3. If one or more patient identifiers are not provided on a sample in a life-threatening situation, group O red cells will be issued until a repeat sample has been tested. If the patient is female and aged <51 years this will be O RhD Negative red cells. Females of 51 years of age or above may be issued O RhD Negative or O RhD

Positive dependant on patient requirements and stock availability at the time. For male patients, O RhD Positive red cells will be issued.

6.15. Compatibility Charts

6.15.1. This information is intended as a guide only and is not designed to be exhaustive, e.g. the presence of clinically significant antibodies can affect compatibility as can Bone Marrow Transplants. If there is any doubt regarding the compatibility of blood components clarification must be sought from the Blood Transfusion Laboratory prior to administration and without delay.

Chart 1 – Compatibility Prompt – Red Blood Cells

* Suitable for male patients and females >51 years of age

		Patient Group							
		A+	**A-**	**B+**	**B-**	**AB+**	**AB-**	**O+**	**O-**
Donor Group	**A+**	●	●*			●	●*		
	A-	●	●			●	●		
	B+			●	●*	●	●*		
	B-			●	●	●	●		
	AB+					●	●*		
	AB-					●	●		
	O+	●	●*	●	●*	●	●*	●	●*
	O-		●	●	●	●	●	●	●

Chart 2 – Compatibility Prompt – FFP and Platelets

		Patient Group			
		A	**B**	**AB**	**O**
Donor Group	**A**	●	●	●	●
	B	●	●	●	●
	AB	●	●	●	●
	O				●

6.16. Administration

6.16.1. Administration should commence within 30 minutes of the collection time. However, it is still possible to commence transfusion of a blood component after this time, providing transfusion of that unit is completed within 4 hours of the collection date and time.

6.16.2. For a standard transfusion without haemorrhage a unit of red cells must not be transfused in under 90 minutes.

6.17. Practicalities of Administration

6.17.1. The use of infusion pumps for the administration of blood components is strongly recommended. Ensure that appropriate blood component administration sets for use with infusion pumps are used.

6.17.2. It is not essential to prime or flush the line prior to or after transfusion. Normal (0.9%) saline must be used if the line is primed/flushed.

6.17.3. The giving set must be changed at least every 12 hours or for each different component type transfused.

6.17.4. A blood warmer is indicated in the following circumstances:

6.17.5. Flow rates of 50ml/kg/hour;

6.17.6. Patient has clinically significant cold agglutinins.

6.17.7. Whilst it should be avoided where possible, patients may be transferred between clinical areas whilst a transfusion is running. For such patients it is important to ensure the observations are recorded as documented in this policy. Ensure relevant transfusions information is handed over, i.e. when observations were last recorded, time of next observations and projected end time. Please follow information in the Trust Patient Transfer policy.

6.17.8. More practicalities of component/product administration are found in tables 2 and 3.

Table 2 - Practicalities of Blood Component Administration (ADULTS) – Quick Reference

Component	Dosage	Typical Administration Time / Rate	Applicable Administration Equipment			
			Gravity Giving Set	Infusion Pump	Pressure Cuff	Blood Warmer
Red Cells (Blood)	4ml/kg (equivalent to 1 unit per 70kg adult) typically increases the Hb by approx 10g/	90-120 mins* Typically 2-3 hrs	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	Yes	Yes
Platelets	1 adult therapeutic dose (ATD) typically increases the platelet count by at least 20-40x10^9/L	Approx. 30-60 mins (20-30ml/kg/hr)	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	No	No
Fresh Frozen Plasma (FFP)	Typically 12-15ml/kg	Approx. 30-60 mins (10-20ml/kg/hr)**	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	Yes	Yes
Cryoprecipitate	Typical adult dose is 2 which would increase the plasma fibrinogen level by about 1g/L	Approx. 30-60 mins (10-20ml/kg/h)	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	Yes	No
Granulocytes	Two packs (mean volume 175-250ml per pack)	Total dose typically over 1-2 hours	Yes Gravity blood component giving set with 170-200 micron filter	Yes Gravity blood component giving set with 170-200 micron filter	No	No
Albumin	As required	4.5% - Rate not to exceed 5ml/min (300ml/hr) 20% - Rate not to exceed 2ml/min (120ml/hr)	Administered IV. Does not require a blood filter/giving set.			

Beriplex	20 units per kg - max dose 3000 units	8ml/min (one 500IU vial should typically be administered over 2.5 mins)	Administered IV. Does not require a blood filter/giving set.
Anti-D	As advised by laboratory	N/A	Administered IM into the deltoid muscle.

* Average routine administration time. Patients less tolerant of increased blood volume should be transfused more slowly with careful haemodynamic monitoring. Some patients may require a diuretic (e.g. furosemide, 20-40mg orally) though this is not necessary as routine. During major haemorrhage, rapid infusion may be required (1 unit over 5-10 mins) with appropriate haemodynamic monitoring. **Also consider use of blood warmer for rapid infusion.**

** Rapid infusion may be appropriate during major haemorrhage but evidence indicates that acute reactions may be more common with faster administration rates.

Table 3 - Practicalities of Blood Component Administration (CHILDREN (<16 Yrs) & NEONATES*) – Quick Reference

Component	Dosage	Administration Time / Rate	Applicable Administration Equipment			
			Gravity Giving Set	Infusion Pump	Pressure Cuff	Blood Warmer
Red Cells (Blood)	Neonates: 10-20ml/kg, or Vol (mls) = desired Hb rise (g/dl) x weight (kg) x 3 Children: Vol (ml) = desired Hb rise (g/dl) x weight (kg) x 3	Neonates: 5ml/kg/hr Children: 5ml/kg/hr (usually 5ml/min, max rate150ml/hr)	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	Yes	Yes
Platelets	Children < 15kg: 10-20ml/kg Children > 15kg: single pack (actual volume recorded on individual pack label)	10-20ml/kg/hr	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	No	No
Fresh Frozen Plasma (FFP)	10-20ml/kg	10-20ml/kg/hr	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	Yes	Yes
Cryoprecipitate	5-10ml/kg**	10-20ml/kg/hr Approx 30 mins	Yes Gravity blood component giving set with 170-200 micron filter	Yes (preferred) Appropriate blood component giving set with 170-200 micron filter	Yes	No

Albumin	Seek Advice from a Paediatrician

*Information is for routine top up transfusions only. Refer to BSCH guidelines listed below for exchange transfusions and large volume transfusions.
** Transfusion of this volume of cryoprecipitate is estimated to increase the plasma fibrinogen by approximately 0.5-1.4g/L. Fibrinogen levels should be measured post transfusion. 1-2 pools (approx volume 190ml, actual volume recorded on pack) may be used for larger children as appropriate for their weight.

References (Tables 2 and 3):

British Standards in Haematology (BSH) Guideline for Neonates and older Children, 2004
British Standards in Haematology (BSH) Guideline for The Administration of Blood Components, 2009
Handbook of Transfusion Medicine (2013) 5th Edition. Editor D Norfolk. Norwich. TSO.

6.18. **Care and Monitoring of the Transfused Patient**

6.18.1. Observations are to be recorded on VitalPAC or on the same paper chart as other observations if VitalPAC is unavailable.

6.18.2. All observations (temperature, pulse, blood pressure, respiration rate) must be recorded as follows for each unit being transfused:

6.18.2.1. Baseline (maximum of 60 mins prior to start time);

6.18.2.2. 15 minutes after commencement;

6.18.2.3. After another 15 minutes;

6.18.2.4. Hourly until transfusion is completed;

6.18.2.5. Post transfusion (maximum of 60 mins after stop time).

6.18.3. Visually observe the patient for any sign of adverse reaction throughout the transfusion but especially during the administration of the first 5-10ml e.g. flushing, urticaria, vomiting, diarrhoea, fever, itching, headache, haemoglobinuria, pain at or near the infusion site, rigor, severe backache, collapse and circulatory failure.

6.18.4. Where possible, the patient must be encouraged to report new symptoms arising during the transfusion. Any significant change in the patient observations or overall clinical condition must be acted upon. Refer to Chart 3, for appropriate actions.

7. Transfusion Reactions

7.1. Reactions to blood components/products may be very mild to severe and life threatening. Serious or life-threatening acute reactions are rare but new signs/symptoms which develop during transfusion must be acted upon immediately. In the early stages, it may be difficult to categorise the type of reaction.

7.2. Acute transfusion reactions (ATR) are categorised as follows:

7.2.1. Acute haemolytic transfusion reaction;

7.2.2. Transfusion of bacterially contaminated unit;

7.2.3. Transfusion related acute lung injury (TRALI);

7.2.4. Transfusion associated circulatory overload (TACO);

7.2.5. Anaphylactic reactions.

7.3. Other transfusion reactions include:

7.3.1. Febrile non-haemolytic transfusion reaction;

7.3.2. Transfusion associated graft versus host disease (TA-GvHD);

7.3.3. Delayed haemolytic transfusion reaction (DHTR);

7.3.4. Post transfusion purpura (PTP);

7.3.5. Transmission of infection.

7.4. Management of a Suspected Acute Transfusion Reaction

7.4.1. In the first instance, refer to Chart 4 below. Patient symptoms must be treated accordingly and medical staff should contact the Haematologist for additional advice where required.

7.4.2. If a transfusion reaction is suspected and the transfusion stopped, the following must be observed:

7.4.2.1. Print a 'Transfusion Reaction Form' from AllScripts (found in the 'print letter' option);

7.4.2.2. Send blood samples highlighted on the above form to the laboratory. These blood samples must be accompanied by appropriate request forms;

7.4.2.3. Not all blood samples are required for all types of transfusion reactions. Please discuss with transfusion laboratory staff/Transfusion Practitioner or Haematologist;

7.4.2.4. Send the suspected unit back to the laboratory;

7.4.2.5. Submit an incident report on the Datix system (site Transfusion Practitioner to be the investigator);

7.4.2.6. Document the reaction and actions taken in the patient's healthcare record, including the number of millilitres the patient has received from the unit and the time symptoms have subsided.

7.4.3. It is essential to notify the laboratory of a suspected ATR as soon as possible. Depending on the type of reaction, NHSBT may need to be notified as associated components from the implicated donation must be removed from the blood supply.

7.5. Recurrent Reactions

7.5.1. Patients do not need routine pre-medication of hydrocortisone or chlorpheniramine. Some patients may develop fever or rigors during or following the transfusion. These patients should be prescribed hydrocortisone (100mg IV)

and chlorpheniramine (8mg orally). This dose of pre-medication can be used prophylactically to prevent further reaction episodes and should be administered a minimum of 30 minutes before starting the transfusion. If reactions persist please discuss with a Haematologist.

7.6. Delayed Transfusion Reaction Management

7.6.1. Patients may experience a delayed transfusion reaction up to 14 days post transfusion. All patients who are transfused and are for immediate discharge should be told to report to their GP or A&E if any of the following are experienced: diminished urine output, jaundice or unexplained malaise.

7.7. Managing Transfusion Reactions Assessment

Chart 3 - Transfusion Reaction Management

(Modified from Welsh Transfusion Practitioner's Group Tool)

Symptoms / Signs	Mild	Moderate	Severe
Temperature	Temperature of ≥38°C **AND** rise of 1-2°C from baseline temperature	Temperature of ≥39°C **OR** a rise of ≥2°C from baseline temperature	Sustained febrile symptoms or any new, unexplained pyrexia **in addition** to clinical signs
Rigors/ Shaking	None	Mild chills	Obvious shaking / rigors
Pulse	Minimal or no change from baseline	Rise in heart rate from baseline of 10bpm or more NOT associated with bleeding	Rise in heart rate from baseline of 20bpm or more NOT associated with bleeding
Respirations	Minimal or no change from baseline	Rise in respiratory rate from baseline of 10 or more	Rise in respiratory rate from baseline of 10 or more accompanied by dyspnoea / wheeze
Blood Pressure (Hypo/ Hypertension)	Minor or no change to systolic or diastolic pressure	Change in systolic or diastolic pressure of ≤30mm/Hg NOT associated with bleeding	Change in systolic or diastolic pressure of ≥30mm/Hg NOT associated with bleeding
Skin	No change	Facial flushing, rash, urticaria, pruritis	Rash, urticaria **and** Peri-orbital oedema Conjunctivitis
Pain	None	General discomfort or myalgia Pain at cannula site	Acute pain in chest, abdomen, back
Urine	Clear Normal output		Haematuria / Haemoglobinuria / Oliguria / Anuria
Bleeding	No new bleeding		Uncontrolled Oozing
Nausea	None		Nausea or Vomiting

Chart 4 - Management of Observed / Recorded Symptoms

Management of Observed / Recorded Symptoms				
As far as possible the maximum benefit from exposure to the blood component must be realised, i.e. the aim is to continue the transfusion if appropriate. Consider the patient's overall clinical condition. Consider other causes & clinical history, e.g. sepsis. However, if there are concerns that the transfusion may cause more harm than good, it should be stopped and investigated. Please follow this guide:				**If transfusion stopped**
All Green Generally aim to restart & complete transfusion.	PAUSE transfusion AND leave connected	•Re-check identity of patient with unit tag •Repeat obs and EWS •Inform doctor	•If all well, continue at reduced rate for 30 min and then resume at prescribed rate •Continue to monitor patient carefully and be alert for other symptoms / signs of a transfusion reaction •Anti-pyretics can be given	**RETURN** implicated unit including giving set immediately to the lab for further investigation **INFORM** the Transfusion Laboratory **COMPLETE & SENT TO LAB** a Transfusion Reaction Investigation Form (found on ALLSCRIPTS) & complete a DATIX report. **COMPLETE** request forms for: **Blood Cultures** where infection is suspected. **Blue Top: Clotting Screen** (To look for Coagulopathy) **Yellow Top:** **E&Cr, LFT, Bilirubin, CRP, LDH** (All to look for haemolysis or sepsis) **Purple Top: FBC** (To look for haemolysis) **Pink top: G&S** (To confirm group and antibody status, and to look for antibody activation. (DAT will be included.)
1 or more Amber Generally aim to re-start & complete transfusion, but with more caution than above (green).	PAUSE transfu-sion AND leave connected	•Re-check identity of patient with unit tag •Repeat obs and EWS •Inform doctor •Consider IV fluids for hypotension	•If symptoms stable or im-prove over next 15 min con-sider restarting unit •Antihistamines and / or anti-pyretics can be given	
1 or more red	**STOP** transfusion and **disconnect**	•Request immediate clinical review •Re-check identity of pa-tient with unit tag •Repeat obs and EWS •Consider / administer IV fluids for hypotension	•Inform the transfusion lab •Contact Haematologist •NB Consider other causes e.g. sepsis & treat accord-ingly •If transfusion stopped & in-vestigation instigated, there may be a delay in the provi-sion of further units.	

8. Patient Special Requirements

8.1. Some patients may have additional requirements which relate to their underlying condition or treatment. It is the requestor's responsibility to ensure the laboratory staff are aware of such requirements, which will enable appropriate components to be provided. Early communication is vital to minimise any potential delays as not all components with special requirements are held in routine stock. These will require ordering from NHSBT.

8.2. CMV Seronegative Components

8.2.1. Cytomegalovirus is a common herpes virus that causes asymptomatic infection or a mild glandular fever-like illness in most healthy individuals. It can be transmitted by transfusion of cellular blood components although this may be difficult to distinguish from reactivation of previous infection. CMV can cause severe, sometimes fatal, infection in foetuses, neonates and immunocompromised adults.

8.2.2. CMV seronegative red cells and platelets should be provided for intrauterine transfusions and neonates (up to 28 days after expected date of delivery).

8.2.3. CMV seronegative red cells and platelets should be provided, where possible, for pregnant women. In an emergency, such as major haemorrhage, standard components should be given to avoid delay.

8.2.4. Standard components are suitable for all other transfusion recipients, including haemopoietic stem cell transplant patients, organ transplant patients and immune deficient patients, including those with HIV.

8.3. Irradiated Blood Components

8.3.1. Certain groups of patients are at risk of developing Transfusion–Associated Graft-vs-Host Disease (TA-GVHD) if given cellular blood components such as red cells, granulocytes or platelets. This can be prevented by using irradiated blood components.

8.3.2. FFP, cryoprecipitate, fractionated plasma products and cryopreserved red cells do not carry this risk of transmitting TA-GVHD.

8.3.3. These guidelines define the groups of patients for whom irradiated cellular blood components are indicated and the local procedure to be followed to ensure that appropriate patients receive irradiated blood components at all times.

8.3.4. Indications**:**

8.3.4.1. Hodgkin's disease: throughout treatment and follow up i.e. indefinitely;

8.3.4.2. Purine analogues and their hybrids (fludarabine, cladrabine, deoxycorfomycin, pentostatin, bendamustine, clofarabine, alemtuzamab): patients who receive purine analogues from the start of treatment, indefinitely;

8.3.4.3. Salvage chemotherapy regimes e.g. ESHAP, Rice, Ice, Minibeam, D/Hap, ABVD, BEACOPP, CHLVPP, MOPP, CYCLO-PRIMING and others that may emerge;

8.3.4.4. Autologous stem cell transplant: from seven days before stem cell or bone marrow harvest, until at least 3 months afterwards (extended to 6 months if the patient received TBI as part of conditioning therapy);

8.3.4.5. Allogeneic stem cell transplant: from the time of initiating conditioning chemo/radiotherapy for at least 6 months or while still receiving immunosuppressive therapy or while still lymphopenic (defined as a lymphocyte count of less than 1 x 109/L). Those patients with disorders of cell mediated immunity receive irradiated blood products for at least 2 years post-transplant;

8.3.4.6. Known or suspected disorders of cell mediated immunity: indefinitely or until two years after allogeneic stem cell transplant;

8.3.4.7. Infants who have received intrauterine transfusions (where time permits);

8.3.4.8. Patients receiving HLA matched platelets;

8.3.4.9. Patients receiving granulocyte transfusions;

8.3.4.10. Bone marrow donors: prior to/during harvest;

8.3.4.11. Patients having received Anti-Thymocyte Globulin (ATG).

8.3.5. If a patient falls into one or more of these groups the following procedure must be followed:

8.3.5.1. It is the responsibility of the Consultant or senior medical officer of the medical team; to inform the laboratory, both verbally and in writing of the need to supply special requirements.

8.3.5.2. A notification/cancellation form for requirement for irradiated blood components is to be used (Q-Pulse doc. ref BLT-FO-213).

8.3.5.3. The requirement for irradiated blood components and action taken must be recorded in the patient's healthcare record and on the designated sheet at the front of the healthcare record, including a

review date. In the absence of a designated sheet, there must be documentation on the alert page of the healthcare record.

8.3.5.4. If the patient is an Oncology patient, an action sheet must be completed to ensure the requirement is recorded on KCHORIS.

8.3.5.5. Ensure patient receives an information leaflet and irradiated blood card.

8.3.5.6. Once the requirement for irradiated blood components has ceased the relevant doctor must notify the Blood Transfusion Laboratory verbally and in writing that the need for irradiated cellular components has ceased.

8.3.6. Responsibility of the Laboratory:

8.3.6.1. Upon receipt of notification of the need to supply irradiate cellular components the laboratory is to make an entry reflecting this on the SRPAD of ALL records pertaining to that patient on the Pathology computer system.

8.3.6.2. On receipt in the laboratory of notification that irradiated blood components/ products are no longer required, relevant details in the SRPAD on ALL records concerning that patient must be updated, including details of the doctor giving the notification.

8.3.7. Responsibility of ward by staff administering blood components/products:

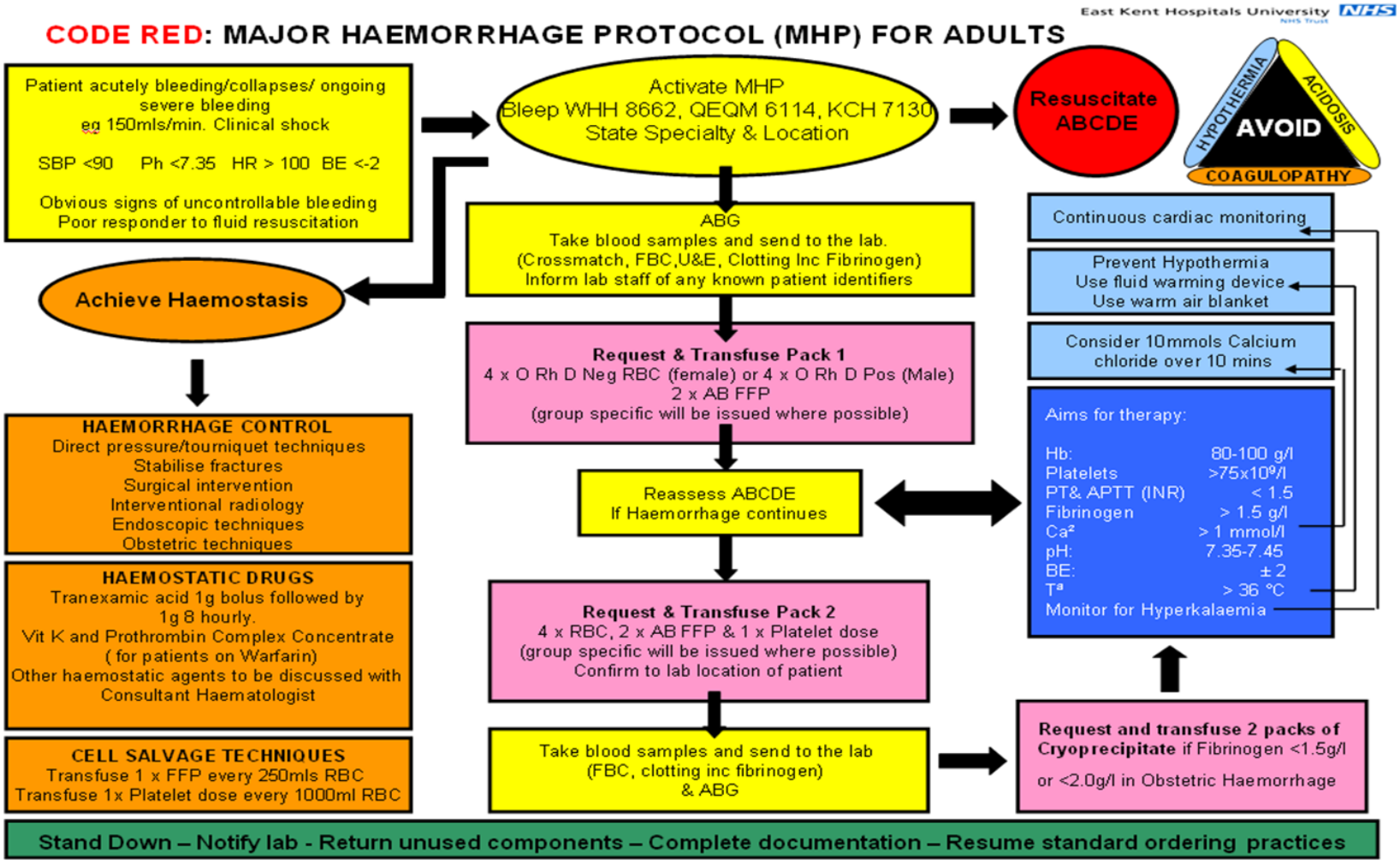
8.3.7.1. The same pre-administration checks must be carried out as for all blood components/products.

8.3.7.2. The patient’s healthcare record must be interrogated and the patient asked if they are aware of needing irradiated components or carry a card.

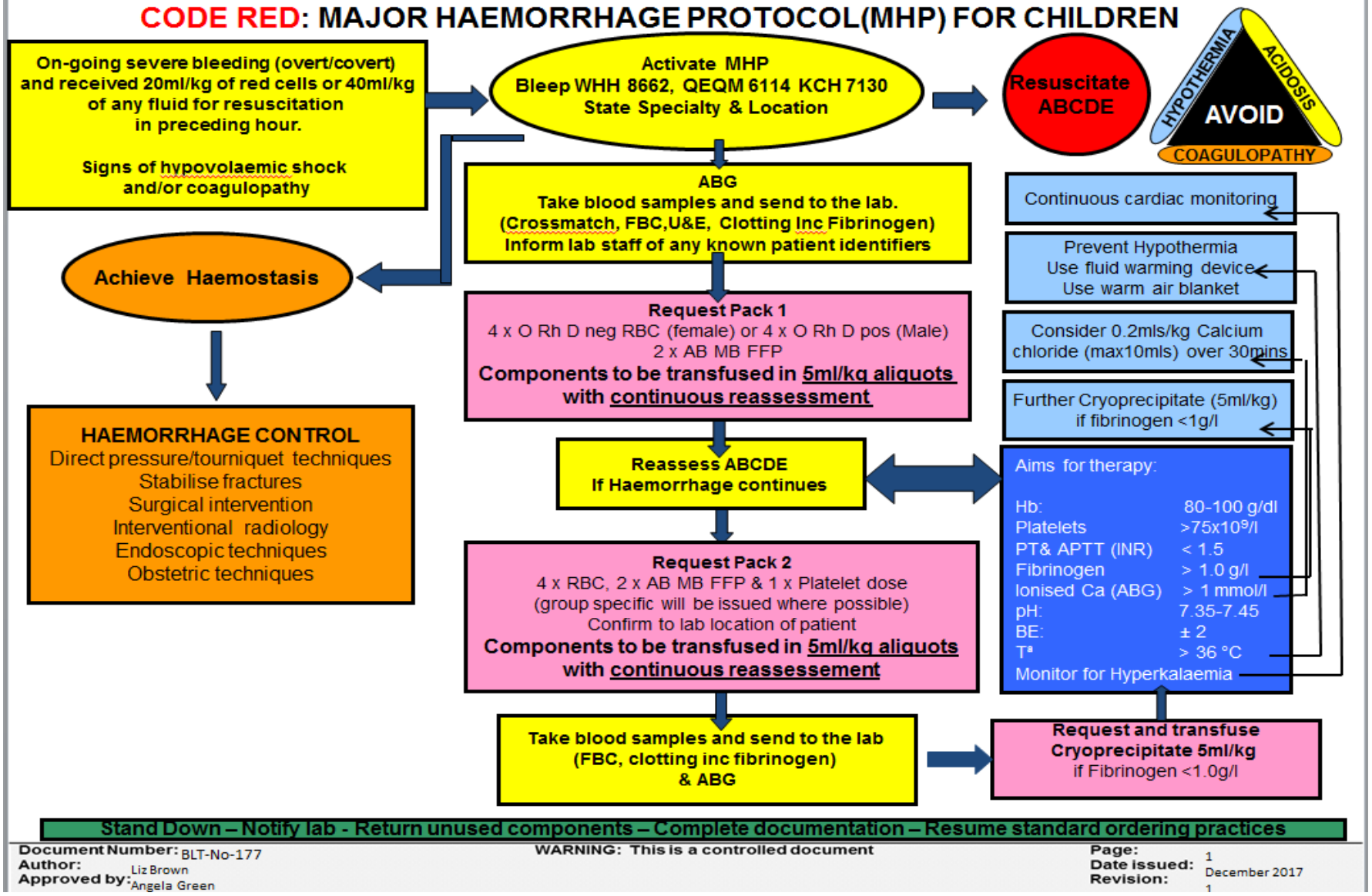
8.3.7.3. All irradiated blood products carry a label to indicate that they have been successfully irradiated.

9. Major Haemorrhage

9.1. EKHUFT has a Major Haemorrhage Protocol for use in life threatening bleeding cases. Please refer to the following flow charts.



CODE RED: MAJOR HAEMORRHAGE PROTOCOL(MHP) FOR CHILDREN



10. Policy Development, Approval and Ratification

10.1. The Hospital Transfusion Committee has been consulted on this policy.

10.2. This policy will be ratified by the Policy Authorisation Group.

11. Review and Revision Arrangements

11.1. This policy will be reviewed as scheduled in three years' time unless legislative or other changes necessitate an earlier review.

11.2. It will be ratified by the Policy Compliance Group every three years, or when there are significant changes and/or changes to underpinning legislation.

12. Policy Implementation

12.1. Refer to Appendix K.

13. Document Control including Archiving Arrangements

13.1. Archiving of this policy will conform to the Trust's Information Lifecycle and Records Management Policy, which sets out the Trust's policy on the management of its information.

13.2. This policy will be uploaded to the Trust's policy management system.

13.3. Version 5.1 of this policy, which this document supersedes, will be retained within the Trust's policy management system for future reference.

14. Monitoring Compliance

14.1. Aspects of practice detailed within this policy will be monitored via local and national audit.

14.2. The Transfusion Practitioner Team and/or Laboratory Managers will be responsible for registration of participation in national audits.

14.3. The Transfusion Practitioner Team will be responsible for a local annual audit programme that covers aspects of the policy.

14.4. It is expected that all aspects of the policy will be audited each 24 months.

14.5. Audit reports will be made available to the HTC upon completion. Any remedial actions will be agreed and delivered within a specified period.

14.6. Annual monitoring reports will be submitted to the Patient Safety Board by the Transfusion Co-ordinator on behalf of the HTC.

15. References

British Standards in Haematology. Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories. 2012.

British Standards in Haematology. Guideline on the investigation and management of Acute Transfusion Reactions. 2012.

British Standards in Haematology. The administration of blood components. 2017

British Standards in Haematology. Guidelines for the use of fresh frozen plasma, cryoprecipitate and cryosupernatant. 2004.

British Standards in Haematology. Guidelines for the use of platelet transfusions. 2016

British Standards in Haematology. Guideline for the use of anti-D immunoglobulin for the prevention of haemolytic disease of the fetus and newborn. 2014

British Standards in Haematology. Transfusion for Fetuses, Neonates and Older Children. 2016

Norfolk D (2013) Handbook of Transfusion Medicine (5th Ed) Norwich: TSO

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Sazama K (1990). Reports of 355 transfusion-associated deaths: 1976 through 1985. Transfusion, 30, 583-590.

Lumadue JA et al (1997). Adherence to strict labelling policy decreases the incidence of erroneous blood grouping of blood specimens. Transfusion, 37, 1169-1172.

Cummins D et al (1998). Errors in the labelling of blood transfusion request forms and specimen tubes; findings of a single centre study. Transfusion Medicine, 8 (suppl 1), 6.

Sharp S, & Cummins D (1998). Addressograph stickers: an important cause of labelling errors in blood transfusion medicine. Transfusion Medicine, 8 (suppl 1), 6.

Royal College of Pathologists and Institute of Biomedical Science (1999). The retention and storage of pathological records and archives: report of a working party of the Royal College of Pathologists and the Institute of Biomedical Science (3rd Ed). 2005.

National Patient Safety Agency. Safer Practice Notice 14. Right Patient, Right Blood. 2006.

Department of Health. Health Service Circular 2007/001. Better Blood Transfusion 3: Safe and Appropriate Use of Blood. 2007

16. Appendices

Appendix A – Guideline for the Use of Red Cells

1. Introduction

1.1. The decision to transfuse red cells is dependent on the cause of anaemia, its severity and type, the patient's ability to compensate for the anaemia, severity of symptoms of anaemia, the likelihood of further blood loss and the need to provide some reserve before the onset of tissue hypoxia. There are no fixed parameters for prescribing red cells. Transfusion haemoglobin triggers may be used in conjunction with a complete evaluation of the patient's clinical condition, associated signs/symptoms and risk factors.

1.2. Over transfusion can be as dangerous as under transfusing a patient. The associated risks of red cell transfusions need also to be balanced against the perceived benefits.

2. Indications for Use

2.1. Use restrictive red blood cell transfusion thresholds for patients who need red blood cell transfusions and who do not:

2.1.1. Have major haemorrhage; or

2.1.2. Have acute coronary syndrome; or

2.1.3. Need regular blood transfusions for chronic anaemia.

2.2. When using a restrictive red blood cell transfusion threshold, consider a Hb threshold of 70g/L and a concentration target of 70–90g/L after transfusion.

2.3. Consider a red blood cell transfusion threshold of 80g/L and a Hb concentration target of 80–100g/L after transfusion for patients with acute coronary syndrome.

2.4. Consider setting individual thresholds and Hb concentration targets for each patient who needs regular blood transfusions for chronic anaemia. It is important to establish the underlying cause of anaemia. The use of red cells should be avoided where appropriate alternatives exist.

2.5. If red cells are used, the aim should be to transfuse to maintain the haemoglobin just above the lowest concentration at which the patient is asymptomatic.

3. Doses

3.1. Consider single-unit red blood cell transfusions for adults (or equivalent volumes calculated based on body weight for children or adults with low body weight) who do not have active bleeding.

3.2. After each single-unit red blood cell transfusion (or equivalent volumes calculated based on body weight for children or adults with low body weight), clinically reassess and check haemoglobin levels, and give further transfusions if needed.

4. Peri-operative transfusions

4.1. For elective cases, pre-operative assessment and avoidance measures are important, i.e. pre-operative optimised haemoglobin, reversal of anticoagulant therapy, discontinued use of anti-platelet drugs.

4.2. Consider use of pharmacological agents to reduce surgical bleeding, intra-operative cell salvage and post-operative collection and re-infusion of autologous blood.

5. Oncology patients

5.1. Anaemia is independently associated with poorer patient survival and response to chemotherapy and radiotherapy.

5.2. Radical treatment in patients with head and neck tumours: transfuse if haemoglobin <120g/L.

5.3. Radical or palliative treatment in patients with other malignancies: transfuse if haemoglobin <90g/L.

5.4. For patients receiving symptomatic care only, aim to maintain the minimal asymptomatic haemoglobin concentration.

6. Prescription and Dosage

6.1. It is estimated that in a 70kg non-bleeding patient, one unit of red cells will increase the haemoglobin value by approximately 10g/L.

6.2. Each unit of red cells must be fully transfused within 4 hours from collection. The prescription rate must take into account the time needed for collection and delivery to the ward and pre-administration checks as well as the rate of transfusion appropriate to the patient’s clinical condition.

6.3. One unit of red cells may be safely administered to an adult patient with no underlying risk factors in 90-120 minutes. Refer to section 6.16.6, tables 2 and 3 for prescription information.

7. Administration of Red Cells & Patient Care (including Observations and Reactions)

7.1. Refer to section 6 of main policy for generic blood component administration checks, administration practicalities and care/monitoring of the transfused patient.

7.2. Diuretics are only required for patients at risk of circulatory overload.

7.3. The effectiveness of the red cell transfusion should be measured. A full blood count should be taken to check the incremental rise of haemoglobin. This sample may be taken within minutes of completing the transfusion, after allowing time for the transfused blood to mix into the patient's circulation. However, this will not be functional haemoglobin as it takes 24 hours for red cells to recover from cold storage.

7.4. In a non-bleeding patient, if there has been no increment in haemoglobin please discuss patient management with a Haematologist.

Appendix B - Guideline for the Use of Platelets

1. Introduction

1.1. Platelet concentrates are available from NHS Blood and Transplant (NHSBT) via the Blood Transfusion Laboratory. Platelet concentrates have a shelf life of five days and are stored at 22ºC +/- 2ºC in a designated storage facility. They must never be refrigerated. They are provided as a pack containing one adult therapeutic dose that can either be pooled from a number of donors or single donor apheresis platelets.

2. Indications for Use

2.1. Adults

Prophylactic platelet transfusion	Plt count <$10x10^9$/L reversible bone marrow failure.
	Plt count 10-$20x10^9$/L sepsis/haemostatic abnormality
Prior to an invasive procedure to prevent associated bleeding	Plt count <$20x10^9$/L central venous line
	Plt count <$40x10^9$/L pre lumbar puncture/spinal anaesthesia
	Plt Count <$50x10^9$/L pre liver biopsy/major surgery
	Plt count <$80x10^9$/L epidural anaesthesia
	Plt count <$100x10^9$/L pre critical site surgery, i.e., CNS
Therapeutic use to treat bleeding (WHO bleeding grade 2 or above)	Major haemorrhage plt count <$50x10^9$/L
	Critical site bleeding (i.e., CNS/traumatic brain injury) plt count <$100x10^9$/L
	Clinically significant bleeding not considered severe/life threatening plt count <$30x10^9$/L
Specific clinical conditions	DIC pre procedure or if bleeding reasonable to keep plt count >$50x10^9$/L. Frequent estimation required.
Platelet function disorders Immune thrombocytopenias: auto-immune, post transfusion purpura	**SEEK ADVICE FROM HAEMATOLOGIST**
Not indicated	Chronic stable bone marrow failure
	Prior to a bone marrow biopsy
	Chronic DIC in absence of bleeding
Thrombotic thrombocytopenic purpura (TTP)	**Contraindicated** unless life threatening haemorrhage
Heparin induced thrombocytopenia (HIT)	**Contraindicated** as acute arterial thrombosis can result

2.2. Paediatrics

Platelet Count	Clinical situation to trigger platelet transfusion
<10x10^9/L	Irrespective of signs of haemorrhage (excluding ITP, TTP/HUS,HIT)
<20x10^9/L	Severe mucositis Sepsis Laboratory evidence of DIC in the absence of bleeding* Anticoagulant therapy Risk of bleeding due to a local tumour infiltration Insertion of a non-tunnelled CVL
<40x10^9/L	Prior to lumbar puncture. Transfuse platelets at a higher or lower count (20-50x10^9/L) depending on the clinical situation
<50x10^9/L	Moderate haemorrhage (i.e., GI bleeding) including bleeding in association with DIC Surgery, unless minor (except at critical sites) – including tun-nelled CVL insertion
<75-100x10^9/L	Major haemorrhage or significant post-op bleeding (i.e., post cardiac surgery) Surgery at critical sites: CNS including eyes

*Avoid routine coagulation screening without clinical indication.

3. Requesting Platelets

3.1. Platelets are not stored routinely on all EKHUFT hospital sites as they are a scarce resource and have a short shelf life. Platelets are despatched to order by NHSBT. Contact Blood Transfusion Laboratory staff to discuss urgency and delivery options.

3.2. The laboratory must know the blood group of the patient therefore a Group & Save sample may be required.

3.3. Requests for platelets will be discussed with the requestor and if necessary, referred to a Haematologist, if the request falls outside national/local guidelines.

4. Prescription and Dosage

4.1. Do not routinely transfuse more than one adult therapeutic dose.

4.2. The usual adult dose is one single pooled pack or one single apheresis pack. One adult therapeutic dose (ATD) of platelets should be expected to increase the platelet count in an average 70kg non- bleeding adult by 20-40 x 10^9/L. Larger doses may be necessary in patients with fever, splenomegaly, active bleeding or platelet antibodies.

4.3. If there is any doubt about the type and volume of platelet concentrate required, the request must be discussed with Blood Transfusion Laboratory staff or a Haematologist.

4.4. Refer to section 6.17 of main policy, tables 2 and 3, for prescription information.

4.5. Platelet concentrates must ideally be ABO and RhD compatible. Only RhD negative females capable of childbearing who are given RhD Positive platelets require anti-D immunoglobulin. 250IU of anti-D should be sufficient to cover five adult platelet doses given over a six-week period.

5. Administration of Platelets & Patient Care (including Observations and Reactions)

5.1. Refer to section 6 of main policy for generic blood component administration checks, administration practicalities and care/monitoring of the transfused patient.

5.2. Any delay in administration of platelets once delivered to the clinical area increases aggregate formation and the risk of transfusion reactions.

5.3. To measure the effectiveness of a platelet transfusion, a full blood count may be taken to check the incremental rise from 10 minutes to 24 hours following transfusion. If a 24-hour platelet count shows an increment of $<10 \times 10^9$/L in a non-bleeding patient, please discuss patient management with a Haematologist.

Appendix C - Guideline for the Use of Fresh Frozen Plasma (FFP)

1. Introduction

1.1. Plasma is obtained from whole blood donations or component donation by apheresis. The UK Departments of Health recommend that patients born on or after 1st January 1996 should only receive plasma sourced from countries with a low risk of vCJD. These patients may receive methylene blue treated FFP or Octaplas which is a solvent detergent treated plasma to reduce the risk of viral transmission.

1.2. Plasma is frozen soon after collection to maintain the activity of blood clotting factors. It can be stored up to 36 months at -25ºC or below.

1.3. The laboratory must know the blood group of the patient therefore a Group & Save sample may be required. Note: Group O FFP must only be administered to blood group O individuals.

1.4. Plasma components do not need to be matched for RhD group as they contain no red cells or red cell stroma. They do not cause TA-GvHD and irradiation is not required.

1.5. Refer to sections 6.17 to 6.22 (main policy) for generic blood component administration checks, administration practicalities and care/monitoring of the transfused patient.

2. Indications for Use

2.1. Disseminated intravascular coagulation (DIC), in the presence of bleeding and abnormal coagulation results.

2.2. Massive blood transfusion. Coagulation factor deficiency may occur after loss of 1.5 blood volume.

2.3. Liver disease, to treat bleeding or as a prophylaxis prior to surgery or invasive procedure e.g. insertion of central lines.

2.4. Thrombotic thrombocytopenic purpura (TTP), usually in conjunction with plasma exchange.

2.5. Replacement of single coagulation factor deficiency where specific factor concentrate not available.

3. Contraindications for Use

3.1. Do not use FFP in the following circumstances:

3.1.1. When you can correct coagulopathy effectively with specific therapy such as, PCC, vitamin K, cryoprecipitate, Factor VIII or other specific factor concentrate.

3.1.2. In plasma exchange procedures except for treatment of thrombotic thrombocytopenic purpura.

3.1.3. Treatment of immunodeficiency states.

3.1.4. When you can safely and adequately replace blood volumes with volume expanders such as 0.9% sodium chloride infusion, Hartmann's solution or appropriate colloids.

4. Ordering, Prescription and Dosage

4.1. Dosage is 12-15 ml/kg body weight. Blood Transfusion Laboratory staff will supply the number of units which total a volume closest to that requested. All issued packs of FFP must be transfused.

4.2. The total volume required must be prescribed and the number of units must be individually stated on the prescription chart, i.e. transfuse 750ml prescribed as three separate units. The requestor must liaise with Blood Transfusion Laboratory staff to discuss the number of units which will amount to the total volume required.

4.3. Requests for FFP will be discussed with the requestor and if necessary, referred to a Haematologist, if the request falls outside national/local guidelines.

4.4. Allow 20-30 minutes for thawing of packs.

4.5. Thawed FFP is best used immediately but can be stored in the blood transfusion fridge at 4ºC and infused within 24 hours.

4.6. If FFP is removed from storage and not used, it must be returned to the blood transfusion fridge within 30 minutes.

4.7. Reassess the patient's clinical condition and repeat the coagulation tests after fresh frozen plasma transfusion to ensure that they are getting an adequate dose and give further doses if needed.

Appendix D - Guideline for the Use of Cryoprecipitate

1. Introduction

1.1. Cryoprecipitate is made by thawing UK donor FFP at 4ºC, producing a cryoglobulin rich in fibrinogen, Factor VIII and Von Willebrand factor.

1.2. It is mainly used as a more concentrated, hence lower volume for infusion, source of fibrinogen than FFP.

1.3. The laboratory must know the blood group of the patient therefore a Group & Save sample may be required.

1.4. Once thawed, Cryoprecipitate is stored at room temperature and is viable for four hours.

2. Indications for Use

2.1. DIC where there is bleeding with fibrinogen level less than 1.0 g/L.

2.2. Liver disease to treat bleeding or as a prophylaxis prior to surgery or invasive procedures when fibrinogen level below 1.0 g/L.

2.3. Bleeding associated with thrombolytic therapy causing hypofibrinogenemia.

2.4. Inherited hypofibrinogenemia / dysfibrinogenemia.

3. Ordering, Prescription and Dosage

3.1. Typical adult dose is two pools of cryoprecipitate. This would typically raise plasma fibrinogen by about 1g/L. Further dose may be needed according to fibrinogen level.

3.2. After administration re-assess the patient's clinical condition, repeat the fibrinogen level measurement and give further doses if needed.

3.3. Typical infusion rate 10-20ml/kg/hr.

3.4. Requests for cryoprecipitate will be discussed with the requestor and if necessary, referred to a Haematologist, if the request falls outside national/local guidelines.

4. Administration of Cryoprecipitate & Patient Care (including Observations and Reactions)

4.1. Refer to sections 6.9 to 6.12 for generic blood component administration checks, administration practicalities and care/monitoring of the transfused patient.

4.2. Thawed cryoprecipitate is stored at room temperature and must be infused with 4 hours of thawing.

4.3. Unused packs must be returned to the Blood Transfusion Laboratory as soon as possible.

Appendix E - Guideline for the use of Granulocytes

1. Guideline

1.1. The transfusion of granulocytes may be indicated in patients with life threatening soft tissue or organ infection with bacteria or fungi and low neutrophil count, usually in the setting of severe prolonged neutropenia after cytotoxic chemotherapy.

1.2. These components are ordered from NHSBT on a named patient basis after authorisation from a Consultant Haematologist.

1.3. Granulocyte components must be ABO and Rh(D) compatible and cross matched with the patient. A valid G&S sample is therefore required.

1.4. Granulocytes are irradiated before issue to prevent TA-GvH. They are stored at room temperature (20-24^{o}C, not agitated) and have a 24-hour shelf life from donation.

1.5. A blood component administration set is used. The whole dose is typically administered over 1-2 hours. Refer to sections 6.9 to 6.12 for generic blood component administration checks, administration practicalities and care/monitoring of the transfused patient.

Appendix F - Guideline for the Use of Human Albumin Solution

1. Introduction

1.1. Human albumin solution (HAS) is available as 100ml 20% albumin (contains approx. 20g) and 500ml 4.5% albumin (contains approx. 25g albumin). More than one bottle may be collected at a time. Ensure all unused bottles are immediately returned to the blood transfusion laboratory.

2. 4.5% Albumin

2.1. The two main indications for the use of 4.5% Albumin are:

2.2. Plasmapheresis except in TTP (Thrombotic Thrombocytopenic Purpura.

2.3. Plasma protein replacement in burns: Burns cause a prolonged increase in micro vascular permeability, resulting in a large loss of fluid and protein.

2.4. 4.5% Albumin is not required for most situations of acute plasma volume replacement; alternative crystalloids or colloids are preferable.

2.5. Rate of Infusion (4.5%) - For patients with greatly reduced blood volume and/or shock the rate of infusion may be rapid but should usually not exceed 5ml/min (300ml/hour)

3. 20% Albumin

3.1. Hypoproteinaemia caused by an increased loss of plasma proteins through the kidneys or gut, or by underproduction of proteins by the liver in chronic liver disease can lead to oedema and contraction of the intravascular volume. This triggers compensatory retention of salt and water. In patients with liver disease and nephritic syndrome who have peripheral or pulmonary oedema resistant to diuretics, 20% Albumin followed by a bolus dose of a diuretic may produce a diuresis that can then be maintained by smaller doses of diuretics alone.

3.2. Rate of Infusion (20%)

3.3. Circulatory overload is a risk when infusing 20% albumin (each 100ml of 20% albumin will produce a transient expansion of circulating fluid volume up to four times the volume infused). Close monitoring of patients should be undertaken to identify signs of overload.

3.4. The rate of infusion should not exceed 2ml/min (120ml/hour). One bottle contains 100ml. As the patient improves, rate should be reduced to a recommended rate of 1-2ml/min.

3.5. Paracentesis of 5 litres of uncomplicated ascites should be followed by plasma expansion with a synthetic plasma expander.

3.6. Large volume paracentesis should be performed in a single session with volume expansion being given once paracentesis is complete, preferably using 8 g albumin/l of ascites removed (that is ~100ml of 20% albumin/3L of ascites). (Gut 2006;55;1-12).

4. Adverse Reactions/Events

4.1. Urticaria, pulmonary oedema, fever, shock, transfusion transmitted infection.

4.2. Treat as per protocol in main transfusion policy.

4.3. Albumin is prepared from human plasma and so transmission of infective agents cannot be totally excluded.

4.4. The use of HAS in Paediatrics is rare and is only for use after discussion with the Paediatric Consultant who may seek advice from tertiary centres.

Appendix G - Guideline for the Use of Anti-D

Anti-D is supplied by the Blood Transfusion laboratory. All documentation and checking procedures are identical to those for other blood components/products.

Please refer to the EKHUFT Women's Health Policy 'Anti-D Administration'.

Appendix H - Guideline for the Use of Human Prothrombin Complex Concentrate (PCC)

1. Introduction

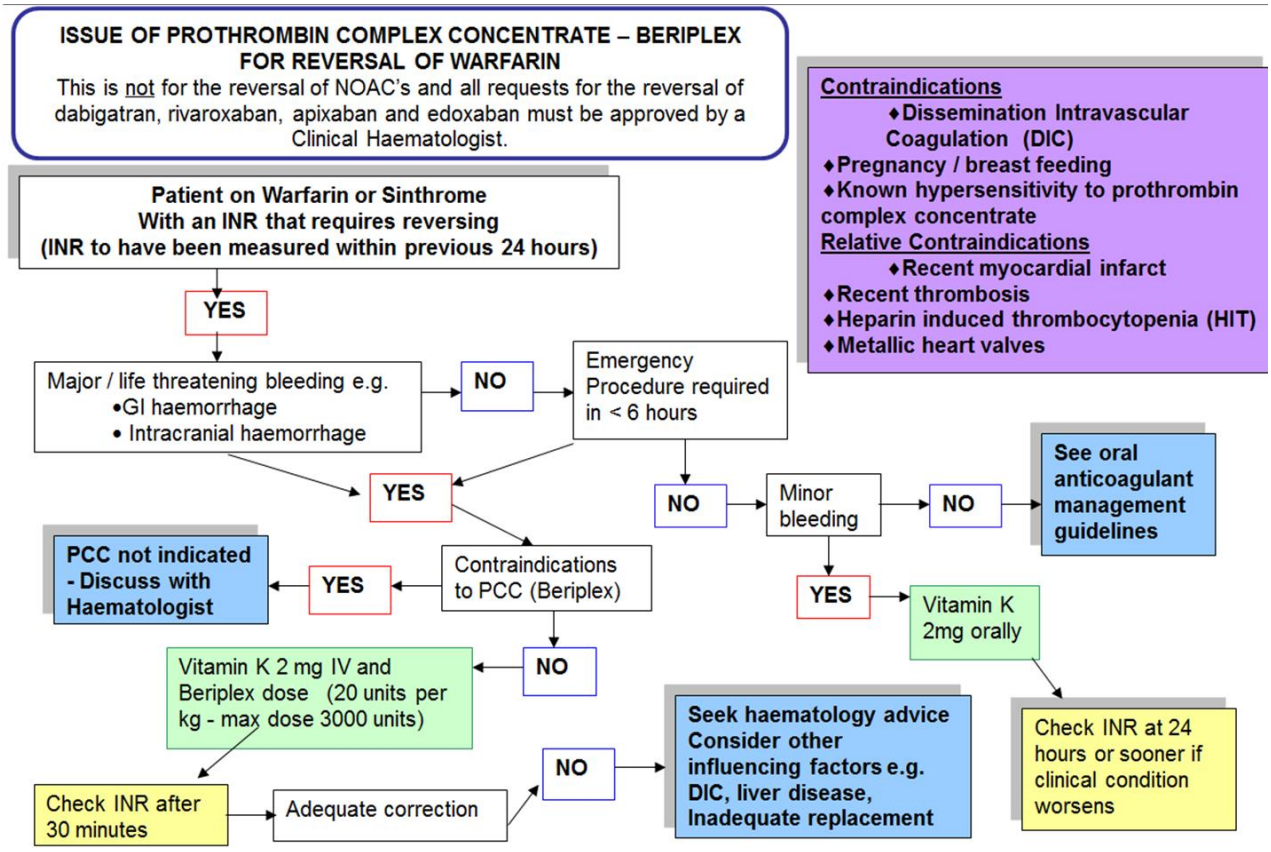
1.1. Prothrombin complex (PCC) contains factor II, VII, IX and X. PCC (e.g. Beriplex) are licensed for use in the treatment and prophylaxis of bleeding in patients with single or multiple congenital deficiencies of factors IX, II, or X (and VII).

1.2. PCC are also used for partial or complete warfarin reversal in patients on warfarin overdose where there is life threatening haemorrhage.

1.3. PCC are supplied by the Blood Transfusion Laboratory. All documentation and checking procedures are identical to those for other blood components/products.

1.4. The following flow chart is to assist in the issuing of Beriplex.

1.5. Also refer to the EKHUFT guideline for the reversal of oral anticoagulant therapy (warfarin and sinthrome only).



Appendix I - Neonatal Transfusion Guidelines

1. Introduction

1.1. Sick and pre-term infants in neonatal intensive care often need transfusion of blood products. Prior to transfusion, verbal consent should be obtained from parents or someone with parental responsibility and documented in the healthcare record.

1.2. In event of emergencies - where obtaining parental consent is not possible or practical and transfusion is in the infant's best interests, transfusions will need to be given without verbal consent being obtained. However, this should be followed by subsequent discussion with parents that allows the actions to be justified and to reassure them that what has been done is in the infant's bests interests (BAPM, 2004).

1.3. Blood products for transfusion need to be cross matched against both infant and maternal blood. Infant's blood sample should be sent in EDTA bottle to establish blood group and DAT and this should be done as a routine when admitting a sick infant or an infant < 32 weeks to NICU/SCBU who are likely to need blood transfusion. Maternal sample also need to be sent if mother has received no antenatal care locally or if the infant has been transferred in from elsewhere.

2. Packed Red Blood Cells (RBC) transfusion

2.1. 15-20ml/kg over 3- 4 hours. The transfusion should produce an increase in haemoglobin of about 30-40g/L. Top up transfusions in excess of 20ml/kg are not recommended because of the risk of transfusion-associated circulatory overload (TACO).

2.2. Blood should be always CMV negative. It should be also irradiated if required for infants who have received intrauterine transfusions or need exchange transfusion. Consider giving Furosemide (0.5 mg/kg midway and at the end of transfusion) in neonates with clinically significant PDA, chronic lung disease, oedema or signs of cardiac failure.

Postnatal Age	Suggested Transfusion Threshold Hb (g/L)		
	Ventilated	On Oxygen/CPAP	Off Oxygen
First 24 hours	<120	<120	<100
≤Week 1 (days 1–7)	<120	<100	<100
Week 2 (days 8–14)	<100	<95	<75–85 depending on clinical situation
≥Week 3 (day 15 onwards)		<85	

Summary of BSH recommendations for neonatal top up transfusions[1.]

2.3. In the event of shock, severe sepsis, coagulation defects, surgery or for unanticipated emergencies, red cell transfusion may be given at a higher threshold at the discretion of attending neonatal consultant.

3. Platelet transfusion

3.1. 10 ml/kg over 30-60 min. The transfusion should produce an increase in platelets of about 25-50 x 10^9/L. However, the therapeutic affect is variable and dependent on on-going consumption. Platelet levels therefore will need to be checked again after infusion.

3.2. Transfused platelets should be CMV negative. It should be irradiated if required for infants who have previously received in-utero transfusions to prevent transmission associated with Graft versus Host disease.

3.3. Infants affected with NAIT (Neonatal Alloimmune Thrombocytopenia) should have their platelet count maintained above 50x10^9/L if there is any bleeding or above 30 if otherwise well with no IVH. Ideally HPA 1a and 5b negative platelets should be used for transfusion and management should be discussed with Consultant Haematologist.

3.4. Suggested transfusion thresholds[1]

*Platelets < 25x10^9/L	In the absence of bleeding
Platelets <50×10^9/L	Bleeding, current coagulopathy, planned surgery or exchange transfusion
Platelets <100×10^9/L	Major bleeding, major surgery (e.g. neurosurgery)

*In a randomised control trial of 660 preterm infants (GA < 34 weeks) with severe thrombocytopenia, those randomly assigned to receive platelet transfusions at a platelet-count threshold of less than 50,000 per cubic millimetre had a significantly higher rate of death or major bleeding within 28

days after randomization than those in the group that received transfusion at platelet count threshold of less than 25,000 per cubic millimetre and this was also found to be true on subgroup analysis (**Data presented at JENS Conference, Maastricht 2019).

3.5. Infants affected with NAIT (Neonatal Alloimmune Thrombocytopenia) should have their platelet count maintained above $50x10^9$/L if there is any bleeding or above 30 if otherwise well with no IVH. Ideally HPA 1a and 5b negative platelets should be used for transfusion and management should be discussed with Consultant Haematologist.

4. Fresh Frozen Plasma

4.1. 15ml/kg over 60 min.

4.2. Indications

4.2.1. Vitamin K deficiency with bleeding. FFP should be given as well as IV Vit K.

4.2.2. In the presence of a significant coagulopathy (PT or APTT ratio > 1.5) and significant risk of bleeding (e.g. preterm with pulmonary haemorrhage).

4.2.3. Infants with coagulopathy who are bleeding and about to undergo invasive procedures. These babies should also receive Vitamin K.

4.3. The therapeutic effect of FFP is variable therefore clotting screen should be checked 2-4hrs after administration.

5. Cryoprecipitate

5.1. 5 ml/kg over 30 min.

5.2. Used as an adjunct to FFP when clotting factors levels are low specifically when Fibrinogen level is < 1.0 g/L.

6. Prescription and Administration of Blood Products

6.1. Prescribe blood on the Infant's Infusion Chart.

6.2. Ensure venous access is available and patent.

6.3. In the absence of peripheral venous access Blood and blood products can be transfused through the UVC.

6.4. In dire circumstances UAC may also be used but only after discussion with the Consultant.

6.5. Check against name bands that are attached to the infant's incubator.

6.6. Red cell transfusion should commence within 30 minutes of blood arriving on the unit. Platelets, FFP and cryoprecipitate should be used as soon as possible after arrival to neonatal unit.

6.7. Platelets and packed red cell should be drawn up through a microaggregate filter into a 30 - 50ml syringe prior to transfusion. No filtering is required in case of FFP and cryoprecipitate.

6.8. Administration should include pressure monitoring and close inspection of IV site.

6.9. Unused packs should not be refrigerated but should be returned to the blood laboratory.

7. Observations and Adverse Reactions

7.1. As for all transfusions - see main Blood Transfusion policy.

8. References and Associated Documents (Neonatal Section)

Joint United Kingdom (UK) Blood Transfusion and Tissue Transplantation Services Professional Advisory Committee – Transfusion handbook 2013– effective transfusion in paediatric practice - neonatal transfusion

Anna Curley et al. Randomized Trial of Platelet-Transfusion Thresholds in Neonates. The New England Journal of Medicine 2018

Clinical Nursing Procedures (1996) 4th Edition. Editors: Mallett J & Bailey C The Royal Marsden NHS Trust

Guidelines for the Administration of Blood & Blood Components and the Management of Transfused Patients (2009) produced by the British Committee for Standards in nematology & Blood Transfusion Task Force.

Sazama K (1990). Reports of 355 transfusion-associated deaths: 1976 through 1985. Transfusión, 30, 583-590.

Lumadue JA et al (1997). Adherence to strict labeling policy decreases the incidence of erroneous blood grouping of blood specimens. Transfusion, 37, 1169-1172.

Cummins D et al (1998). Errors in the labeling of blood transfusion request forms and specimen tubes; findings of a single center study. Transfusion Medicine, 8 (suppl 1), 6.

Sharp S, & Cummins D (1998). Addressograph stickers: an important cause of labeling errors in blood transfusion medicine. Transfusion Medicine, 8 (suppl 1), 6.

Working Party of the Royal College of Pathologists (1995). The retention and storage of pathological records and archives. Royal College of Pathologists Marks and Spencer Publication Unit.

Williamson LM et al 1997/2009 SHOT Report.

NPSA Safer Practice notice 14

HSC 2007/001 Better Blood Transfusion 3.

BSH guidelines for administration of FFP

BSH guidelines for administration of RBC

BSH guidelines for administration of platelets

BSH guidelines for administration of immunoglobulin anti D

BAPM (2004) Consent for Neonatal Clinical care. Good Practice Framework.

BSH Transfusion Task Force. (2004)Transfusion Guidelines for Neonates and Older Children, British Journal of Haematology, 124 (433-453).

2005 amendment to the guidelines on transfusion for neonates and older children.

2005 amendment to the guidelines for the use of fresh frozen plasma, cryoprecipitate and cryosupernatant (selection according to ABO and RhD grouping)

2007 amendment to the transfusion guidelines for neonates and older children (specification of imported FFP)

Kirpalani H et al. A randomized controlled trial of a restrictive (low) versus liberal (high) transfusion threshold for extremely low birth weight infants: the PINT study. J Pediatr 2006;149:301-7

Bell EF et al. Randomized trial of liberal versus restrictive guidelines for red blood cell transfusion in preterm infants. Pediatrics 2005; 115:1685-91.

Whyte R, Kirpalani H. Low versus high hemoglobin concentration threshold for blood transfusion for preventing morbidity and mortality in very low birth weight infants. Cochrane Database of Systematic Reviews 2011, Issue 11.

Ibrahim M et al. Restrictive versus liberal red blood cell transfusion thresholds in very low birth weight infants: A systematic review and meta-analysis. Journal of Paediatrics and Child Health, 50: 122–130.

Appendix J – Equality Analysis

An Equality Analysis not just about addressing discrimination or adverse impact; the policy should also positively promote equal opportunities, improved access, participation in public life and good relations.

Person completing the Analysis		
Name	Angela Green	
Job title	Blood Transfusion Co-ordinator	
Care Group/Department	Clinical Support Services	
Date completed		
Who will be impacted by this policy	[Y] Staff (EKHUFT) [Y] Staff (Other) [Y] Service Users	[N] Carers [Y] Patients [N] Relatives

Assess the impact of the policy on people with different protected characteristics. When assessing impact, make it clear who will be impacted within the protected characteristic category. For example, it may have a positive impact on women but a neutral impact on men.		
Protected characteristic	**Characteristic Group**	**Impact of decision** Positive/Neutral/Negative
e.g. Sex	Women Men	Positive Neutral
Age	All	Neutral
Disability	All	Neutral
Gender reassignment	All	Neutral
Marriage and civil partnership	All	Neutral
Pregnancy and maternity	All	Neutral
Race	All	Neutral
Religion or belief	All	Neutral
Sex	All	Neutral
Sexual orientation	All	Neutral

If there is insufficient evidence to make a decision about the impact of the policy it may be necessary to consult with members of protected characteristic groups to establish how best to meet their needs or to overcome barriers.	
Has there been specific consultation on this policy?	No
Did the consultation analysis reveal any difference in views across the protected characteristics?	N/A

Mitigating negative impact: Where any negative impact has been identified, outline the measures taken to mitigate against it.	N/A

Conclusion: Advise on the overall equality implications that should be taken into account by the policy approving committee.	This policy will not result in unlawful discrimination

Appendix K – Policy Implementation Plan

To be completed for each version of policy submitted for approval.

Policy Title:	Blood Transfusion Policy
Version Number:	6
Director Responsible for Implementation:	Director of Clinical Support Services
Implementation Lead:	Blood transfusion Co-ordinator

Staff Groups affected by policy:	EKHUFT staff Staff of community hospitals, private/ independent organisation or hospices served by EKHUFT.
Subsidiary Companies affected by policy:	Policy applies to staff employed by 2gether Support Solutions and Spencer Private Hospitals; training to these groups is provided by the EKHUFT Blood Transfusion Teams.
Detail changes to current processes or practice:	Following an incident where the wrong product was collected due to multiple component types being on one blood collection / traceability sheet a change has been added that there is to be one traceability sheet used per different component being collected and transfused. Following an incident regarding the transfer of a patient with blood and blood components a section has been added giving information on the packing and correct procedure of transferring a patient with blood components. Addition of information relating to recurrent transfusion reaction – this is a new section added to the transfusion reaction section on how to manage trans-fusions in patients who regularly react New tool for transfusion reactions replaces BSH flowchart in previous policy Section added Use of granulocytes: Granulocytes are rarely ordered or used within EKHUFT.
Specify any training requirements:	No staff will be allowed to collect, check or administer blood components without being competency assessed by the Blood Transfusion Team

How will policy changes be communicated to staff groups/ subsidiary companies?	No specific requirements