THE ROYAL HOSPITALS NHS TRUST

The Practice for the Care of a Patient Receiving a Blood Transfusion

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1 INTRODUCTION

A blood transfusion is a potentially hazardous procedure which should only be given when the benefit to the patient outweighs the risks - the most important of these being haemolytic reactions and transfusion-transmitted infections.

Stringent procedures must be followed to ensure that the correct blood is given and that any adverse reactions are dealt with promptly and efficiently.

This document outlines a standardised approach to the care of patients receiving blood transfusions. A separate document indicates the requirements for the documentation of transfusions (see Appendix 1).

2 PROCEDURE

2.1 BEFORE THE TRANSFUSION

2.1.1 Obtaining Consent

The reason for needing a transfusion and the risks involved (e.g. transmission of HIV < 1 in a million, hepatitis B < 1 in 20,000, hepatitis C < 1 in 13,000) should be explained to the patient. It is not necessary to obtain written consent for blood transfusion; verbal consent is sufficient.

Where consent is not possible, e.g. in emergency situations, clinical judgement must be used. If a patient/guardian refuses to consent to a transfusion the matter should be referred to a senior doctor for advice.

2.1.2 Prescribing and Requesting Blood

As with the administration of drugs, the transfusion of blood must be prescribed by medical staff, who must complete the requests for blood grouping and crossmatching (see the **Pathology Services Users Handbook**).

There is a special **prescription sheet for blood transfusions** (see Appendix 2).

2.1.3 Sample Collection

Doctors, phlebotomists and some **designated** nurses in the Clinical Haematology, Medical Oncology, Renal and Immunology Units may take blood samples for grouping and crossmatching. Designated nurses must undergo training in sample collection and be certified as being competent in the procedure by the Pathology Support Services Manager; their names will be held on a list in the Blood Transfusion laboratory at the relevant hospital.

Positive identification of the patient is essential, based on questioning the patient (whenever possible), the patient's wrist band and the medical notes. Only one patient should be bled at a time and the sample tube must be labelled immediately after the blood has been added (see Appendix 1).

The sample should be taken to the Blood Transfusion laboratory with the minimum of delay.

2.1.4 Preparation of the Patient.

An appropriate-sized cannula should be inserted using aseptic techniques. The connection of the cannula should be visible and secured. The procedure for setting up an intravenous infusion should be followed and the usual care for intravenous lines should be applied. Infusion pumps may be required for transfusions in children and they must be used according to the manufacturers instructions. Normal saline (if prescribed) may be infused slowly to maintain venous access.

Ensure that the patient is comfortable, suitably positioned and that equipment e.g. urine bottles and personal belongings are within reach. Depending on the general condition of the patient he/she may be able to get out of bed.

Take and record baseline observations of temperature, pulse, and blood pressure prior to the transfusion.

An anaphylactic shock kit, available from pharmacy, should be held on the ward/department (note Special considerations in the Intensive Care Unit and the Coronary Care Unit in Appendix 3). This contains drugs which could be given to counteract severe allergic reactions to the transfusion:

Adrenaline 1:1000 1ml
Hydrocortisone 100mg + diluent
Aminophylline 25mg/ml 10ml

2.1.5 Collecting the Blood
Blood bank refrigerators are situated as follows:-

St.Bartholomew's Hospital
Blood Transfusion laboratory, Intensive Care Unit, Cardiothoracic theatres, King George V block basement and Bodley Scott 3.

Royal London Hospital
Blood Transfusion laboratory, Intensive Care Unit, Front Block and Kneale Jones theatres.

London Chest Hospital
Blood Transfusion laboratory, Intensive Care Unit, and the Operating theatre.

Mile End Hospital
Recovery

The nurse responsible for the care of the patient should:-

a) complete **a transfusion collection slip** which specifies the patients details **(surname, first name, sex, date of birth and hospital number)** before leaving the ward or theatre.

N.B. In exceptional circumstances, the portering service have agreed to assist with the collection of blood (see Appendix 4).

b) check the **patient identification details** on the collection slip are the same on:-
i) the blood transfusion report form and
ii) the compatibility label attached to the blood bag.

c) check that the **identification details on the blood pack** (blood group and pack number) are the same on:-
i) the blood transfusion report form and
ii) the compatibility label attached to the pack.

If details are missing/incorrect the Blood Transfusion laboratory, or out-of-hours the duty MLSO must be contacted.

e) complete the laboratory copy of the blood transfusion report form:-
i) indicate the destination of the blood,
ii) sign the form including the date and time of collection and
iii) leave it in the laboratory.

2.2 IDENTIFICATION PROCEDURE BEFORE THE TRANSFUSION

2.2.1 Identity check of patient and unit of blood
Two people are required to carry out an identity check of the patient and the unit of blood **at the patients bedside.** One person must hold current registration as a first level general nurse (**RGN**), Registered Sick Children's Nurse (**RSCN**) or Midwife (**RM**). The second person may be a doctor, a registered agency nurse, a post-foundation student nurse, (not core curriculum). Health care support workers and medical students are not to take part in this process.

a) Positively identify the patient by asking his/her surname and first name (whenever possible) and make sure that the surname and first name are the same as on the patients identity bracelet. **It is essential that any patient having a blood transfusion has an identity bracelet.**

b) Check that the following details (**surname, first name, date of birth, hospital number, sex**) are the same on:-

i) the patients identity bracelet,
ii) the blood transfusion report form,
iii) the compatibility label attached to the blood bag,
iv) the medical notes and
v) the prescription chart.

c) Check that the **blood group** and **unit number** on the blood pack are identical to those on:-

i) the blood transfusion report form and
ii) the compatibility label attached to the blood pack.

d) Write the unit number on the blood transfusion prescription chart.

e) Sign the **blood transfusion report form, the compatibility label on the blood pack and the blood transfusion prescription sheet** and indicate the date and time of the transfusion.

2.2.2 Location of compatibility report
Keep the **blood transfusion report form** with the **prescription chart** until the transfusion is completed, when it must be fixed in the Pathology reports section of the patient's medical notes.

2.3 STARTING THE TRANSFUSION

a) Units of blood must be removed from the Blood Bank refrigerator one at a time, except in extreme emergencies where very rapid transfusion of blood is required.

b) Start the transfusion as soon as possible after delivery of the blood to the ward, **and no longer than half an hour after collection from the Blood Bank refrigerator.** If this is not possible the blood should be returned to the refrigerator within half an hour.

c) **If a unit of blood has been out of the refrigerator for more than half an hour** it must be returned to the Blood Transfusion laboratory, explaining that it has been un-refrigerated for more than half an hour.

Blood bags must never be stored in drug/domestic refrigerators.

d) Use a blood giving set for blood transfusion. **A filter,** if used, should be connected according to the manufacturers instructions. **Electronic infusion pumps** may damage blood cells, therefore they must not be used unless it has been verified that the device is safe to use for this purpose by referring to the manufacturers instructions.

e) Wash your hands before starting the transfusion and utilise a no-touch technique for the connection of the transfusion. Disposable, non-sterile gloves should be worn.

f) Check that:-
   i) the blood pack shows no sign of damage and that there is no evidence of leakage and
   ii) the blood has not passed its expiry date.

e) Commence the transfusion adjusting the regulation clamp to ensure the prescribed rate of blood flow.

IMPORTANT.
DRUGS MUST NEVER BE ADDED TO A UNIT OF BLOOD.

2.4 MONITORING THE PATIENT

2.4.1 Schedule of observations

a) A separate observations chart should be used for blood transfusion, in addition to the patients on-going TPR chart (see Appendix 5) (note Special considerations in the Intensive Care Unit and the Coronary Care Unit in Appendix 3).

b) Record temperature, pulse and blood pressure before the start of the transfusion, and temperature and pulse at 30 minutes and 1 hour after the start of each unit and then at hourly intervals until the end of each unit (note Special considerations in the Intensive Care Unit and the Coronary Care Unit in Appendix 3).

c) Observations should be continued half-hourly after the transfusion if any adverse reactions have occurred.

d) Observe the patient closely for adverse effects, including complaints of feeling unwell, shivering, rashes, flushing, pain in extremities or in the loins.
Severe transfusion reactions are most likely to occur during the first half an hour of the transfusion.

2.4.2 Transfusion reactions

If a reaction is suspected (see 2.4.1d) or if the patients temperature rises by more than 1°C ***STOP THE TRANSFUSION.***

a) Contact the doctor immediately and inform the Blood Transfusion laboratory.

b) Change the giving set and maintain venous access using normal saline running slowly, to keep the vein open. Return the unit to the Blood Transfusion laboratory.

c) Carry out observations at half-hourly intervals.

d) Record the volume and colour of any urine passed. The urine should not be thrown away but saved for analysis.

Some examples of transfusion reactions and their management are given in Appendix 6.

2.5 CHANGING THE GIVING SET

Change the giving set if the transfusion is to run for more than 12 hours in order to avoid growth of organisms.

Use a new giving set if another infusion is to continue after the transfusion.

2.6 COMPLETING THE TRANSFUSION

Attach the blood transfusion report form to the Pathology Reports section of the patients notes. Seal the blood bags using the spigot attached, and dispose of the bag according to each hospital's policy (see Appendix 7).

3 EVALUATION OF CARE OF A PATIENT WHO HAS RECEIVED A BLOOD TRANSFUSION

The patient has received the correct blood.

All records of the transfusion are complete and have been filed in the patient's hospital notes.

Empty blood bags have been taken to a designated collection point.

Adverse reactions have been detected speedily and managed appropriately, and the Blood Transfusion laboratory has been informed of any reactions.

4 ADMINISTRATION OF PLATELET CONCENTRATES

Platelet concentratee should be transfused as soon as possible after reaching the ward.

Platelet concentrates must not be refrigerated.

Standard blood giving sets or special platelet giving sets may be used. Platelets should not be transfused through giving sets which have been used for blood.

The transfusion of platelets should normally be completed within half an hour.

Observations during a platelet transfusions should include pulse and temperature before and after the transfusion. If a reaction is suspected or has occurred, observations should be maintained at half-hourly intervals following the transfusion.

5 ADMINISTRATION OF FRESH FROZEN PLASMA (FFP)

Prior to use, FFP must be thawed according to appropriate control conditions in the blood transfusion laboratory. It must not be thawed on the ward.

Thawed plasma should normally be administered within half an hour to avoid loss of activity of coagulation factors.

Observations during administration of FFP should include pulse and temperature before the transfusion and at half-hourly intervals during the transfusion. If a reaction is suspected or has occurred, observations should be maintained at half-hourly intervals following the transfusion.

APPENDIX 1

POLICY FOR DOCUMENTATION OF BLOOD TRANSFUSIONS

The purpose of this policy is to describe the requirements for documentation in relation to blood transfusion. The policy is based on Guidelines for Hospital Blood Bank Documentation and Procedures drawn up by the British Committee for Standards in Haematology.

Most deaths related to transfusion are due to clerical mistakes. These may occur at the time of the collection of blood samples from the patient, in the laboratory or when the blood transfusion is administered. Standard operating procedures must be followed in both clinical and laboratory areas at all times to avoid these errors, and it must be possible to trace every stage of the transfusion procedure and the individuals involved.

REQUESTS

The completion of requests for blood grouping, crossmatching of blood, and blood products are the responsibility of medical staff. The doctor is responsible for completing and signing all requests, which must contain the following details:-

Unique patient number (Hospital, A & E number or Major Accident number)
Surname
First name (initials not sufficient)
Sex
Date of birth (age not sufficient)
Location of patient (Ward, Clinic)
Indication for transfusion
Number of units of red cells or other blood components, any special requirements such as CMV-negative, leucocyte-depleted or irradiated, and the date required
Date of request
Doctors signature

If the patient is unconscious and unknown, all details apart from the surname, first name and date of birth must be completed.

SAMPLE COLLECTION

The collection of the patient sample for blood grouping and crossmatching must be carried out according to the **Code of Practice for Phlebotomists.**

This may be undertaken by medical staff, or phlebotomists and designated nursing staff who have been trained in the procedure. Particular attention must be paid to the following:-

Positive identification of the patient based on interrogation of the patient (whenever possible), the patient's identification label (e.g. wrist band) and the patient's hospital notes.

Only one patient should be bled at a time and the sample tube must be labelled **immediately** after the blood has been added. **Never pre-label the sample tubes.**

The sample tube must be labelled with the following details:-

Unique patient number
Surname
First name
Date of birth
Ward/Clinic
Date sample taken
Signature of the person taking the blood

Addressograph labels must not be used on sample tubes.

COLLECTION OF BLOOD/BLOOD COMPONENTS

The collection of blood from the Blood Transfusion laboratory or one of the Blood Bank refrigerators must be carried out by a responsible member of the ward/theatre/clinic team. Members of staff collecting blood from the Blood Transfusion laboratory should be equipped with documentation which specifies the patient's details. Blood collection slips are available from the Blood Transfusion laboratory for this purpose. The procedure for the collection of blood is described in detail in the **PRACTICE FOR THE CARE OF A PATIENT RECEIVING A BLOOD TRANSFUSION** which has been drawn up for use in this hospital and which is available on each ward and in each operating theatre.

THE TRANSFUSION

The transfusion of blood must be carried out according to the **PRACTICE FOR THE CARE OF A PATIENT RECEIVING A BLOOD TRANSFUSION.**

Particular attention must be paid to the following:-

The type of blood component/blood product including special requirements e.g. leucocyte-depleted, CMV-negative, irradiated and the rate of transfusion must be clearly prescribed by medical staff.

Any discrepancy in the identity checks of the patient, the unit of blood, or the blood transfusion report form must be reported to the Blood Transfusion laboratory and the blood must not be transfused until the discrepancy has been resolved.

The blood transfusion report form must remain attached to the patient's **PRESCRIPTION CHART** during the transfusion and must be fixed in the patient's **MEDICAL NOTES** after the transfusion.

THE DOCUMENTATION OF THE TRANSFUSION IN THE MEDICAL NOTES

Each transfusion must be documented in the patient's medical notes including the following:-

Date of the transfusion
Clinical indication for the transfusion
Type of blood component or product used
Amount of blood component or product used
Transfusion reactions and their management
Effectiveness of the transfusion

TRANSFUSION REACTIONS

If there is a **TRANSFUSION REACTION**, for example if the patient feels unwell or has a rise in temperature of > 1°C, the transfusion must be stopped immediately and the Blood Transfusion laboratory or the Haematology MLSO on-call must be notified. Advice about the management of the reaction may be obtained from one of the medical staff in the Department of Haematology.

Some examples of transfusion reactions and their management are given in Appendix 6.

FURTHER INFORMATION

Further information about blood transfusion can be obtained from the Blood Transfusion laboratory or medical staff in Haematology.

Each ward and operating theatre has a copy of the '**Handbook of Transfusion Medicine**' drawn up by the UK Blood Transfusion services. Further copies are available from the Blood Transfusion laboratory.

Prescription for Blood Transfusion
The Royal Hospitals NHS Trust

THE ROYAL HOSPITALS NHS TRUST

Addressograph:

Name
Date of Birth
Hospital No:
Ward
Consultant
HO/SHO Name & Bleep No.

	Date	Time	Type & Amount of Blood/Blood Component	Infusion Rate	CMV - negative ? Yes/No	Irradiated ? Yes/No	Leucocyte - depleted Yes/No	Doctors' Signature
1								
2								
3								
4								
5								
6								
7								

	Set-Up				
	Unit Number	Date	Time	Signature of Registered Nurse	Witness
1					
2					
3					
4					
5					
6					
7					

NB: Each unit of blood/blood product must be prescribed individually; No other form should be used to prescribe blood products; Abbreviations and initials must not be used on this form. **DRUGS MUST NEVER BE ADDED TO BLOOD OR BLOOD PRODUCTS.**

APPENDIX 3

SPECIAL CONSIDERATIONS IN THE INTENSIVE CARE UNIT AND THE CORONARY CARE UNIT

The following deviations from the procedures have been agreed for patients in the Intensive Care Unit and the Coronary Care Unit:

Section 2.1.4 Preparation of the patient

ITU do not hold a specific anaphylactic shock kit, but all the drugs contained therein are held in unit stock

Section 2.4.1 Schedule of observations

a) All patients on ITU and CCU undergo continuous observations of vital signs and therefore specific observations for blood transfusion are not necessary. The nurses must of course comply with all other aspects of the procedure with regard to changes in vital signs, knowledge of signs/symptoms of transfusion reactions.

b) The observations will be recorded on the routine ITU and CCU observation charts, although the fact that blood is running should be detailed on the chart.

Prescription & Fluid Balance

a) The blood component will be prescribed on the routine ITU and CCU fluid charts, in the Colloid section. A separate prescription is not felt appropriate.

b) The nurse should record each unit of blood, the unit/batch number, and the time that it commenced on the fluid chart.

APPENDIX 4

INSTRUCTIONS FOR PORTERING STAFF COLLECTING BLOOD FROM THE BLOOD TRANSFUSION LABORATORY

Royal London and St.Bartholomew's Hospitals
Portering staff may be requested to collect blood from the Blood Transfusion laboratories in exceptional circumstances. Requests will be directed to the chargehand who will complete **a transfusion collection slip** which specifies the patients details **(surname, first name, sex, date of birth and hospital number)** and give it to the porter collecting the blood.
The porter should:-

a) Find the patient's blood transfusion report form from the wooden box on the front of the Issue Refrigerator (St.Bartholomew's) or from the file in front of the Issue Refrigerator (Royal London)

b) Remove the units of blood intended for the patient from the refrigerator.

c) check the **patient identification details** on the collection slip are the same on:-
- i) the blood transfusion report (the pink and white form) and
- ii) the compatibility label attached to the blood bag.

d) check that the **blood pack identification details** (blood group and pack number) are the same on:-
- i) the blood transfusion report and
- ii) the compatibility label attached to the pack.

If details are missing/incorrect the Blood Transfusion laboratory, or out-of-hours the duty MLSO must be contacted.

e) complete the laboratory copy of the blood transfusion report form:-
- i) indicate the destination of the blood,
- ii) sign the form including the date and time of collection and
- iii) leave it in the laboratory.

f) Take one unit of blood and the blood transfusion report to the ward or operating theatre and put the remaining units of blood in the nearest Blood Transfusion refrigerator.

London Chest Hospital
Portering staff may be requested to collect blood from the Blood Transfusion laboratory in exceptional circumstances. Requests will be directed to the Chargehand who will complete **a transfusion collection slip** which specifies the patients details **(surname, first name, sex, date of birth and hospital number)** and give it to the theatre porter collecting the blood.

The porter should give the collection slip to the MLSO in the Blood Transfusion laboratory, who will log out the appropriate units of blood from the Issue refrigerator and give them to the porter to take to the refrigerator in the Intensive Care Unit.

Blood bank refrigerators are situated as follows:-

St.Bartholomew's Hospital
Blood Transfusion laboratory, Intensive Care Unit, Cardiothoracic theatres, King George V block basement and Bodley Scott 3.

Royal London Hospital
Blood Transfusion laboratory, Intensive Care Unit, Front Block and Kneale Jones theatres.

London Chest Hospital
Blood Transfusion laboratory, Intensive Care Unit, and the Operating theatre.

Addressograph

The Royal Hospitals NHS Trust

Blood Transfusion Observations Form

THE ROYAL HOSPITALS NHS TRUST

Ward:

HO/SHO Name:

Bleep No:

Date:	BASELINE	Blood Unit No.	Blood Unit No.	Blood Unit No.	Blood Unit No.	Blood Unit No.	Blood Unit No
Time:		30 60 120 180 240 300 360	30 60 120 180 240 300 360	30 60 120 180 240 300 360	30 60 120 180 240 300 360	30 60 120 180 240 300 360	30 60 120 180 240 300 360

TEMPERATURE °C 40 39 38 37 36 35

BLOOD PRESSURE / PULSE 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40

RESPS 35 30 25 20 15 10 5 0

GENERAL OBSERVATION

Date/Time	Problems Reported by Patient / Nurse	ACTIONS

APPENDIX 6

ACUTE COMPLICATIONS OF TRANSFUSION

Some examples of Acute and Delayed Complications of Transfusion

Problem	Cause	Timing in relation to transfusion and frequency of occurrence	Severity of resulting clinical condition, management and prevention
ACUTE COMPLICATIONS Acute intravascular haemolysis of transfused red cells	ABO incompatible transfusion eg. group A blood into Group O recipient. Usually occurs due to simple clerical errors e.g. taking sample for crossmatching from the wrong patient or transfusing blood to the wrong patient.	Often during first few ml of infusion. Reported to occur in about 1 in 500,000 units transfused (1 in 200,000 red cell transfusion episodes).	Mortality approx. 10% due to DIC and acute renal failure. Management: Maintain the blood pressure and renal perfusion. Transfuse compatible red cells. Consider possibility of DIC and renal failure and seek advice about management. Prevention: Use safe documentation and checking systems for blood administration.
Febrile non-haemolytic reactions	Anti-leucocyte anti- bodies in patient, who has been pregnant or previously transfused, reacting against leucocytes in the transfused blood.	Towards end of infusion or within hours of completing the transfusion. Frequency: 0.5-1% of transfusions (more often in multi-transfused patients).	Unpleasant but not life- threatening. Treatment: Paracetamol or other antipyretic. Prevention: Use leucocyte-depleted cellular components for patients having recurrent episodes.
Urticaria	Antibodies in patient to infused plasma proteins or infusion of allergens which react with IgE antibodies in the patient.	During the transfusion. Frequency: 1-2% of transfusions.	Unpleasant but not life-threatening. Treatment: Give chlopheniramine 10-20mg iv/im. Prevention: Pre-medicate with chlorpheniramine 10-20mg before transfusion in patients having recurrent episodes.
Anaphylaxis	In some cases antibodies are found in patient against IgA in the transfused blood; these patients are often deficient in IgA.	Very rare.	May be life threatening. Management: Maintain airway. Give adrenaline 0.5-1mg i/m and chlorpheniramine 10-20mg by slow i/v injection. Repeat the injection of adrenaline every 10 mintues until improvement occurs. Prevention: Use washed red cells from IgA deficient donors or autologous blood.

APPENDIX 7

DISPOSAL OF EMPTY BLOOD BAGS

St.Bartholomew's Hospital

Attach the blood transfusion report form to the Pathology Reports section of the patients notes. On completion of a transfusion each blood bag must be closed using the spigot attached. The empty pack must be taken immediately to one of the refrigerators designated for specimens and empty blood bags, and placed in the yellow bag at the bottom of the fridge in the blood compartment.

These refrigerators can be found at the following locations:

West Wing	James Gibb Ward	
King George 5th Block	Ground floor	Theatre D lobby
	1st floor	Theatre E lobby
	2nd floor	Theatre G lobby
	4th floor	Blood bank refrigerator room
East Wing	Bodley Scott Ward II (sluice room)	
	Ground floor theatres	
QEII Block	Harvey Ward (sluice room)	
Lucas Block	Ground floor	

Royal London Hospital

Attach the blood transfusion report form to the Pathology Reports section of the patients notes. Seal the blood bags with a spigot, and keep them on the ward for 48 hours after the transfusion before disposal in a yellow disposal bag into the clinical waste bin.

London Chest Hospital

Attach the blood transfusion report form to the Pathology Reports section of the patients notes. Seal the blood bags with a spigot. The empty pack must be taken immediately to one of the stainless steel containers designated for empty blood bags. The Porters will ensure that these are delivered to the Blood Transfusion laboratory, where they will be logged out on the computer and stored for 48 hours before autoclaving.

APPENDIX 8

REFERENCES/FURTHER READING

Handbook of Transfusion Medicine (1996). UK Blood Transfusion Service. (A copy should be available in each ward & Operating Theatre).

ABC of Transfusion (1992). Ed. M.Contreras. British Medical Journal Publishing Group.

Pritchard & David (1990). The Royal Marsden Hospital Manual of Clinical Nursing Procedures. Harper & Row.

Documentation of Blood Transfusions. An audit carried out by the Blood Transfusion laboratory and the Department of medical Audit. St Bartholomews' & Homerton Hospitals. August 1993.