Manchester University
NHS Foundation Trust

## DOCUMENT CONTROL PAGE

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## Contents

## Glossary

**Blood Component:** This term is used to represent the different constituents of blood which can be manufactured from a whole blood donation. These include red cells (also known as a 'blood' transfusion), platelets, plasma, cryoprecipitate and granulocytes.

**Blood Product:** This term is used to refer to batched products which are commercially manufactured from blood. This includes anti-D, human albumin solution (HAS), immunoglobulin and prothrombin complex concentrate (PCC). Note: Solvent detergent treated fresh frozen plasma (SD-FFP, Octaplas) should be regarded as a blood component.

**A 'blood transfusion sample'**: A blood sample which will be used by the Hospital Transfusion Laboratory for serological investigation (such as a blood group and antibody screen or crossmatch). The sample may be used for other investigations such as a direct antiglobulin test (DAT) or additional/confirmatory testing at the regional reference laboratories.

**Crossmatched *or serological crossmatch*:** A procedure for evaluating the compatibility of a blood component prior to transfusion to a known recipient. The crossmatching of red cells is performed by combining the red cells from the intended unit for transfusion with a sample of the recipient's plasma. If no reaction is seen, this may be regarded as 'crossmatch compatible'. A crossmatch is performed prior to blood being issued from the Hospital Transfusion Laboratory in non-emergency/urgent situations and takes approximately 45 minutes to perform.

**Uncrossmatched:** 'Uncrossmatched' blood will not have undertaken the process as described above. Uncrossmatched blood is issued in emergencies where the recipient's blood group may not be known/confirmed (such as major haemorrhage). Although uncrossmatched, the red cell unit will be ABO and D matched or compatible.

**Electronic Issue (E.I):** This is the selection and issue of red cells where compatibility is determined and controlled by the laboratory information management system (LIMS), it is also known as a 'computer crossmatch'. A serological crossmatch (as described above) does not take place.

## 1.0 Contact Details and Emergency Stock Information

1.1 Useful Numbers

| | |
|---|---|
| **MFT Hospital Transfusion Laboratory Numbers:** | |
| Oxford Road Campus (ORC) | 0161 276 4400<br>Internal extension: 64400 |
| Wythenshawe Hospital (WH) | 0161 291 2161<br>Internal extension: 2160 or 2161 |
| Trafford General Hospital (TGH) | 0161 746 2479<br>Internal extension: 62479<br><br>Number operational between 07:00 – 21:00 Monday to Friday (including bank holidays) *and* 08:00 - 20:00 Saturday and Sunday only.<br>*Outside of these hours, bleep: 0060.* |
| North Manchester General Hospital (NMGH) | 0161 720 2100<br>Internal extension: 42100 |
| **Lead Consultant for Blood Transfusion:** | |
| Oxford Road Campus (and Trust wide) | Dr Jayne Peters (via Switchboard)<br>*Jayne.peters@mft.nhs.uk* |
| Royal Manchester Children's Hospital (RMCH) | Dr Sabiha Kausar (via Switchboard)<br>*Sabiha.kausar@mft.nhs.uk* |
| Wythenshawe Hospital (WH) | Dr Sumaya Elhanash (via Switchboard)<br>*Sumaya.elhanash@mft.nhs.uk* |
| Trafford General Hospital (TGH) | Dr Rachel Brown (via Switchboard)<br>*Rachel.brown2@mft.nhs.uk* |
| North Manchester General Hospital (NMGH) | *In post from October 2022*<br>Dr Shehana Wijethilleke (via Switchboard)<br>*Shehana.wijethilleke@mft.nhs.uk* |
| **MFT Transfusion Practitioners:** | |
| 0161 276 8041 or via Vocera 'transfusion practitioners' (Monday – Friday between 07:30 – 16:30) | |
| **On call Haematologist for Blood Transfusion:** | |
| ORC: (1) Haematology SpR and (2) Consultant Haematologist (General) via Switchboard<br>RMCH: (1) Paediatric Haematology SpR and (2) Consultant for Paediatric Haematology via Switchboard<br>All other sites – Consultant Haematologist (General) via Switchboard | |
| **NHS Blood and Transplant (NHSBT) Therapeutic Apheresis Service Referrals:** | |
| National number: 0300 020 0496 (24 hours) | |
| **Intra-operative Cell Salvage Referrals:** | |
| ORC and TGH: Perfusion Department 0161 276 5778 (emergency cases can be booked via Switchboard - on call perfusionist).<br>Wythenshawe: Can be requested on HIVE by selecting 'cell salvage' under special requirements when booking a theatre slot. Alternatively, contact the Autologous Transfusion Coordinator via Switchboard (08.30 – 17.00 – available during core working hours only.<br>NMGH: Cell Salvage Coordinator via online referral (08:30-17:00) - for elective surgery only | |

1.2 Location of Emergency Blood/ Blood Components Stock (By Site)

| Oxford Road Campus (ORC) | | |
|---|---|---|
| Location | Emergency red cells (blood) | Other blood components/products |
| **ORC Main Hospital Transfusion Laboratory**<br><br>On arrival, ask for emergency blood (group O D positive* or negative) | 4 x group **O D positive*** *and*<br>4 x group **O D negative** units for ADULT use<br>2 x LVT (Large Volume Transfusion) units available for children over 1 year<br>*If blood is required for an infant (under 1 year), inform staff* | Pre-thawed fresh frozen plasma (FFP) x 4 ADULT units available<br><br>3 x 1000 IU vials of Octaplex® (Prothrombin Complex Concentrate, PCC) |
| **MRI Adult Emergency Department**<br>Satellite Blood Fridge | 4 x group **O D positive*** *and*<br>4 x group **O D negative** units for ADULT use | 3 x 1000 IU vials of Octaplex® (PCC) |
| **MRI 2nd Floor Theatres**<br>HaemoBank™ | 2 x group **O D positive*** *and*<br>2 x group **O D negative** units for ADULT use | |
| **MRI Ward 44**<br>Satellite Blood Fridge | No emergency blood/blood components available | |
| **RMCH 1st Floor Theatres**<br>Satellite Blood Fridge | 2 x group **O D negative** paedipacks *and*<br>2 x group **O D negative** LVT units | 1 x 100ml 4.5% human albumin solution (HAS)<br><br>1 x 500ml 4.5% human albumin solution (HAS) |
| **RMCH Emergency Department**<br>Satellite Blood Fridge | 2 x group **O D negative** paedipacks *and*<br>4 x group **O D negative** LVT units | 1 x 100ml 4.5% human albumin solution (HAS)<br><br>1 x 500ml 4.5% human albumin solution (HAS) |
| **St Mary's Central Delivery Unit**<br>Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use *and*<br>2 x group **O D negative** paedipacks for neonatal /paediatric use | |

*__Group O D positive blood may only be selected from satellite fridges for males who are 18 years and over__. For everybody else (or if unsure of sex), select group O D negative blood.

| Wythenshawe Hospital (WH) | | |
|---|---|---|
| Location | Emergency red cells (blood) | Other blood components/products |
| **Hospital Transfusion Laboratory** | 4 x group **O D negative** units for ADULT use | |
| **Adult Emergency Department**<br>Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use | |
| **Treatment and Diagnostics Centre**<br>Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use | |
| **Acute Theatres**<br>Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use | |
| **Main Theatre**<br>Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use | |
| **Endoscopy**<br>Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use | |
| **Maternity Delivery Suite**<br>Satellite Blood Fridge | 1 x group **O D negative** units for ADULT use<br>1 x group **O D negative** LVT (Large Volume Transfusion) unit | |
| **Cardiothoracic Critical Care Unit (CTCCU)**<br>Satellite Blood Fridge<br>**Ward stock* | 2 x group **O D negative** units for ADULT use | 10 x 500ml 4.5% human albumin solution (HAS)*<br>6 x 500 IU vials of Octaplex® (PCC) |
| **Acute Intensive Care Unit (AICU)**<br>Satellite Blood Fridge | No emergency blood/blood components available | |

| North Manchester General Hospital (NMGH) | | |
|---|---|---|
| Location | Emergency red cells (blood) | Other blood components/products |
| **Hospital Transfusion Laboratory** | 4 x group **O D negative** units for ADULT use | |
| **Maternity Delivery Suite** Satellite Blood Fridge | 2 x group **O D negative** units for ADULT use *and*<br>2 x group **O D negative** paedipacks for neonatal /paediatric use | |

| Trafford General Hospital (TGH) | | |
|---|---|---|
| Location | Emergency red cells (blood) | Other blood components/products |
| **Hospital Transfusion Laboratory** | 8 x group **O D negative** units for ADULT use | 4 x 100ml 4.5% human albumin solution (HAS)<br>4 x 500ml 4.5% human albumin solution (HAS) |

**In addition to group O D negative/ group O D positive blood, units of blood allocated to named patients may also be in the emergency fridges. Final two-person, independent bedside checks must be performed prior to administration.**

## 2.0 Purpose of the Policy

2.1 The purpose of this policy is to provide guidance for the correct and safe ordering and administration of blood transfusions to patients from the initial decision to transfuse, blood sampling, blood/blood component collection through to final administration and care of the patient. This policy has been produced to manage the risk of transfusion and improve the quality of care to patients.

2.2 The MFT clinical risk and incident reporting system must be used as a mechanism to improve the standards of care associated with the blood transfusion process. It is important that any near misses or errors at any stage of the process are reported, so that lessons can be learnt. Serious adverse events and serious adverse reactions will

be reported by a member of the Transfusion Team to the national registers of SHOT (Serious Hazards of Transfusion) and the MHRA (Medicines and Healthcare products Regulatory Agency) via the online Serious Adverse Blood Reactions and Events (SABRE) reporting system**.**

## 3 .0 Policy Statement

3.1 This policy aims to provide a clear and practical framework on which to base transfusion practice across Manchester University Hospitals NHS Foundation Trust (MFT).

3.2 The policy is endorsed by the Executive Hospital Transfusion Committee and is based on the current national guidelines and best clinical practice.

3.3 It is essential that all staff involved in the process of blood transfusion undertake the annual clinical mandatory training requirements that incorporate blood transfusion and competency assessments appropriate to their role.

3.4 All staff involved in the transfusion process must understand the importance of their role in ensuring the safety of patients in their care, through:

- The prescribing of appropriate, clinically indicated transfusion
- Establishing transfusion practice that is it based on best clinical practice
- Undertaking transfusion only if the benefits outweigh the potential risks
- The safe handling and storage of blood components
- Accurate patient identification and completion of patient documentation

The right blood, to the right patient, at the right time, for the right reason.

## 4. Roles and Responsibilities

4.1 **Each individual Hospital/Managed Clinical Service is responsible for:** coordinating the response within their own service.

4.2 **The Executive Hospital Transfusion Committee is responsible for**: Ratification of the policy and monitoring the effectiveness.

4.3 **Group Chief Executive Officer and Hospital CEOs are responsible for:** Ensuring the operational implementation of this policy in their areas of responsibility.

4.4 **Medical Directors are responsible for:** Ensuring the operational implementation of this policy in their own Hospital / Managed Clinical Service area of responsibility.

4.5 **The Directors of Nursing are responsible for:** Ensuring dissemination to all staff involved in the blood transfusion process.

4.6 **Duty Managers** must familiarise themselves with this policy.

4.7 **Lead nurses/ Matrons /senior bleep** holders must familiarise themselves with this policy.

Staff should contact their Hospital Transfusion Laboratory or the Transfusion Practitioners should they have any concerns or further questions regarding the 'MFT Blood Transfusion Policy'.

## 5.0. Transfusion Requests and Pre-transfusion Compatibility Testing

All blood transfusion samples and request for components will be made electronically via HIVE. For details on how to make requests using HIVE, please refer to the 'HIVE Blood Transfusion Tip Sheet'.

### 5.1 Blood Group and Antibody Screen (also referred to as a 'Group and Save')

When a correctly labelled sample has reached the Hospital Transfusion Laboratory it will be tested to determine the patient ABO and D blood groups. An antibody screen will also be carried out to detect any circulating red cell antibodies.

The sample is valid for **72 hours** from when it was taken. During this time, if blood is required, the sample can be used for a crossmatch (see below).

Very rarely, patients who have very regular transfusions and have no current or historical antibodies or pregnant patients with no antibodies who require blood on standby for a potential obstetric emergency (such as placenta previa) may be eligible for a concession to the '72-hour rule' when agreed by a Consultant Haematologist.

### 5.2 Crossmatch – Ordering blood

A crossmatch request is made when blood is required for the patient. There is no need to request a blood group and antibody screen at the same time when making this request if the Hospital Transfusion Laboratory have a valid blood group and antibody screen (< 72 hours old) already on site. The type of crossmatch performed will depend on the patient's serological status and history.

## 5.3 Special Requirements for Blood Transfusion

5.3.1 Please refer to the MFT Policy *'Special Requirements for Blood Transfusion'* on the MFT intranet.

### 5.3.2 Special Requirements Notification to the Hospital Transfusion Laboratory

- To notify the Hospital Transfusion Laboratory of a patient's new special requirement (or to change/remove previous special requirements) complete the 'Blood Component Special Requirements Laboratory Notification' electronic order on HIVE.
- Once completed, the form will be sent directly to the Hospital Transfusion Laboratory and the Laboratory will note the changes within their IT system (Laboratory Information Management System, LIMS). Sending the electronic order **will not automatically generate a Special Requirements flag** on the Patient Storyboard within HIVE, it will only inform the Laboratory.

### 5.3.3 Special Requirements Notification on HIVE

- Ensuring a 'Special Requirements' flag is present on the Patient Storyboard will allow all other HIVE users to select the correct special requirements for the patient and for the nurses to check the patient's special requirements during pre-administration checks.
- It is the responsibility of the clinical team looking after the patient to ensure both the 'Blood Component Special Requirements Laboratory Notification' electronic order is sent **and** a 'Special Requirements' flag is put onto HIVE if this is required (see table below).

| | **'Blood Component Special Requirements Laboratory Notification' electronic order** | **'Special Requirements' flag on HIVE by clinical team** |
|---|---|---|
| Irradiated | Required | Required |
| CMV negative | Not required - Automatically provided by the Laboratory based on age and pregnancy status | Required |
| Extended Red Cell Phenotype | Required | Required |
| Blood for patient with Sickle Cell Anaemia (HbS negative) | Not required | Required |
| HLA or HPA matched platelets | Required | Required |
| Laboratory notification of anti-CD38 or anti-CD47 use | Required | Not required |

5.3.4 **Special Requirements and National Frozen Blood Bank (NFBB), Liverpool**

5.3.4.1 If rare blood was donated and frozen prior to the implementation of the national hepatitis E donor screening programme by NHS Blood and Transplant (NHSBT), it may not be hepatitis E negative. For immunocompromised recipients (such as those post-haemopoietic stem cell transplant), request *hepatitis E negative* frozen blood as a special requirement by stating this clearly in the comments box when ordering on HIVE *and* by communicating by phone to the Hospital Transfusion Laboratory.

5.3.4.2 Defrosted blood from NFBB will **not be provided as irradiated**. The defrosting and washing process is deemed sufficient by NHSBT.

5.3.5 **Special Requirements and Sex Assigned at Birth**

5.3.5.1 National guidelines recommend preventative actions to reduce the risk of haemolytic disease of the fetus and the newborn (HDFN) for women, trans and non-binary people who have childbearing potential (age 50 or less).

These recommendations include:

- Provision of Kell negative or Kell matched red blood cells
- Provision of group O D negative red blood cells in an emergency

5.3.5.2 In addition, SaBTO recommend the use of CMV negative blood components during pregnancy for all patients.

5.3.5.3 To safeguard all pregnancies and/or patients with childbearing potential, where sex assigned at birth is female, unknown or not disclosed the Hospital Transfusion Laboratory will assign components to the patient as if they have child-bearing potential (see above).

5.3.5.4 The Hospital Transfusion Laboratory do not take responsibility for issue of unsuitable units when the patient has chosen to not disclose this information, or the ward area provide the incorrect sex assigned at birth.

5.3.5.5 Patient's must be consented prior to disclosure of information.

### 5.4 Positive Patient Identification (PPID)

5.4.1 Confirming that you have the correct patient prior to taking a blood sample for all transfusion tests, requests and prior to component administration is essential to ensure patient safety.

Taking a blood sample from an incorrect patient (a 'wrong blood in tube' or 'WBiT'), can lead to the administration of an **ABO incompatible component that can result in patient death**. An ABO incompatible transfusion is an **NHS Never Event** and is **SHOT (Serious Hazards of Transfusion) reportable.**

5.4.2 By introducing an electronic sampling system such as HIVE, **this risk is not removed** if:

- Positive patient identification (PPID) is performed incorrectly at the start of the process (i.e. application of a wristband) or during the blood transfusion sampling/administration.
- The chain of identification confirmation (via scanning) is broken during blood transfusion sampling/administration process.

5.4.3 It is for this reason that **all patients must have a wristband for safe administration of blood/blood components and inpatient blood transfusion sampling**. If the wristband is on the incorrect patient, absent or unreadable, stop and ensure a new wristband is in place using the correct process for positive patient identification prior to proceeding.

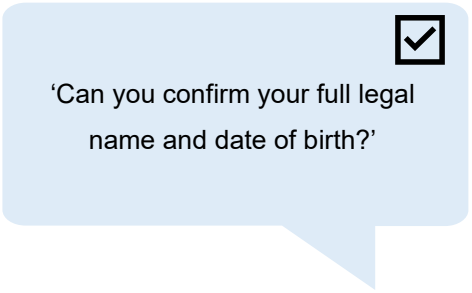
5.4.4 **Using the Patient's Legal Name**

Patient's will have the ability to use a 'preferred name' in addition to their legal name on the HIVE system. For blood transfusion (including identification, blood sampling and administration), **only the patient's legal name will be accepted**.

5.4.5. Positively confirm the patient's identify by asking the patient to confirm their full legal name and date of birth. To do this, use an open question, see example below (5.4.7).

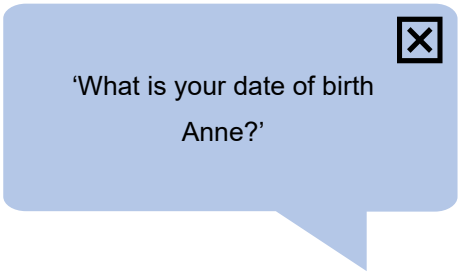
5.4.6 Check the full legal name and date of birth that the patient provides verbally matches the legal name and date of birth printed on the patient's wristband. Do this **before** scanning the wristband to open the patient's record within HIVE. Once in HIVE, check the patient's details and Medical Record Number (MRN) on the wristband and on the patient's electronic record match before proceeding.

5.4.7 An example of correct positive patient identification (PPID):

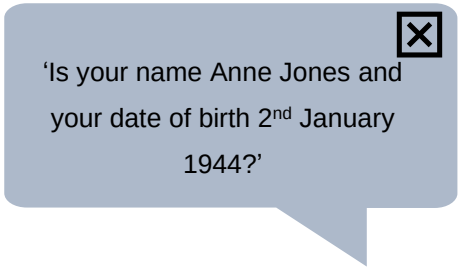



This example uses an open question format and asks for both the patient's full legal name and date of birth.

Examples of incorrect positive patient identification that may lead to patient harm:




Never include the patient's name in the question or only ask part of the question, even if the patient is well known to you.




Never provide the patient with a name and date of birth and ask them to confirm if this is correct.

5.4.8 If an inpatient does not have a wristband, print out a wristband and restart the positive patient identification process (see section 5.5.2).

5.4.9 For unconscious patients or those unable/too young to communicate follow the process of identification checks as detailed in the MFT 'Patient Identification Policy' located on the MFT Intranet.

**5.4.10 The Unknown Patient**

See MFT Policy 'Temporary Identification Criteria for Unknown or Unidentified Patients' for site specific prefixes.

If the patient is unknown the following data must be included:

- Unknown Male or Unknown Female (for safety, if sex unknown 'U', female transfusion rules will be applied)
- Medical Record Number (MRN)
- Date and time on sample
- On confirmation of the patient identity, inform the Hospital Transfusion Laboratory who can check for known transfusion special requirements and antibodies.

**5.5. Blood Transfusion Sampling Process**

5.5.1. Using the correct method for positive patient identification (PPID) is **essential** to ensure patient safety. See section 5.4. All patient transfusion blood samples must be labelled at the patient's bedside (inpatients) or next to the patient (outpatients). Never move away from the patient to print a label or to hand label a sample.

**5.5.2. Inpatient Blood Sampling for Blood Transfusion**

- Use the correct method for positive patient identification (PPID) confirming the patient's full legal name and date of birth.
- Scan the patient's wristband to open the patient's record on HIVE and check the patient's MRN (Medical Record Number) on the wristband matches the number on the patient's record.
- Order a transfusion sample within HIVE (for details on how to make requests using HIVE, please refer to the 'HIVE Blood Transfusion Tip Sheet').
- Always print the label at the patient's bedside, never move away from the bedside to do this.
- Take the blood sample.

- Attach the correct printed label for the patient to the blood transfusion sample tube.
- When prompted within HIVE, scan the patient's wristband and scan the blood transfusion sample to confirm the sample was taken from the correct patient.

5.5.2.1 If your patient does not have a wristband, or you are unable to scan it, print a new wristband using the correct method for positive patient identification (PPID) and restart the process. If the scanner is not working, use another scanner from the clinical area and restart the process.

5.5.2.2 The override function for scanning the patient's wristband to confirm identity is prohibited and exists **only** for emergency situations. The use of the override will be monitored and audited by the Trust and individuals using this function will be contacted. Each override will be reported as a clinical incident and investigated.

5.5.2.3 If the override function is used and the patient's wristband is not scanned to generate a label then no label will be printed. The user is required to restart the process by re-confirming positive patient identification (PPID) before printing a paper request form in the clinical area and hand labelling the sample.

**5.5.3. Outpatient and Community Blood Sampling for Blood Transfusion**

*For outpatients and in the community, patients will not have wristbands. Confirming positive patient identification (PPID) using the correct method remains **essential** for patient safety.*

- Use the correct method for positive patient identification (PPID) confirming the patient's full legal name and date of birth.
- Open the patient's record.
- Order transfusion sample within HIVE (for details on how to make requests using HIVE, please refer to the 'HIVE Blood Transfusion Tip Sheet').
- HIVE will prompt to verbally re-confirm the patient's date of birth and ask the user to type the date of birth provided **verbally** into the system (format:DD/MM/YYYY).
- If the reconfirmed date of birth matches, a label will be generated.
- Always print the label next to the patient, never move away to do this.
- Take the blood sample.
- Attach sticker to the blood transfusion sample tube.

- If the date of birth does not match the patient's record, no label will be printed.
- The user will need to restart the process and re-confirm the positive patient identification (PPID) before printing a paper request form and hand labelling the sample.

5.5.3.1 When hand-labelling a patient sample, ensure this is performed at the bedside following the correct positive patient identification.

The details required on the sample include:

- Legal surname (in full)
- Legal forename (in full)
- Date of birth
- MRN (Medical Record Number)

The person taking the sample must date and sign the bottle (and request form).

## 5.6. Two Sample Rule

5.6.1 If a patient does not have a historical blood group recorded within the Hospital Transfusion Laboratory Information Management System (LIMS), a second sample is required to confirm the patient's blood group prior to the issue of ABO group specific blood/blood components.

5.6.2 The 'two sample rule' is national guidance and in place to reduce the risk of a wrong blood in tube (WBiT) leading to the incorrect ABO blood group being transfused. ABO incompatibility is an NHS Never Event and can result in patient death.

5.6.3 The second sample must be taken at a separate time from the first sample. Best practice is for two different staff members to take the samples separately, 15 minutes apart.

5.6.4 To avoid delays in the emergency situations, emergency group O blood can be used until the first and second samples are received and processed.

## 5.7 Specimen Rejection

5.7.1 For transfusion, any unlabelled, incorrect or unreadable samples will be discarded, and the clinical area will be notified by telephone. **This includes use of the patients 'preferred name' and not the legal name on hand labelled samples**. Clinical staff must provide a contact number/bleep and the correct patient location when taking a sample and/or making a request on HIVE.

5.7.2 The Hospital Transfusion Laboratory monitors the labelling of samples and request forms. An audit of compliance with the Specimen Acceptance Policy is provided to the Trust's Hospital Transfusion Team at regular intervals. Education and training sessions highlight specimen labelling errors and incidents.

## 5.8 Members of Staff who can Collect a Transfusion Blood Samples

| Members of staff | Requirements |
|---|---|
| Qualified Doctors | Doctors receive training and assessment in venepuncture as part of their medical training. No written evidence is required. |
| Registered Nurses (including Paediatric Nurses) and Midwives | Must have completed the venepuncture training and have written evidence of this. |
| Assistant Practitioners | The Ward Managers must ensure venepuncture training has been completed and have written evidence of this. |
| Phlebotomists | Must have completed the venepuncture training and have written evidence of this. |
| Clinical Support Workers | Must have completed the venepuncture training and have written evidence for this. |
| Student Nurses/midwives, medical students, trainee phlebotomists | May take blood group and antibody screen and crossmatch samples on completion of venepuncture training and this must be under the **direct supervision** of the qualified member of nursing/clinical staff. |

## 5.9 Blood Group and Antibody Screening and Blood/Blood Component Issue Requests

5.9.1. It is recommended that a pre-operative blood group and antibody screen or crossmatch sample and request is sent to the Hospital Transfusion Laboratory between 24 – 48 hours pre-operatively to allow time for identification of any red cell antibodies and to obtain blood with the correct specifications.

5.9.2. **Blood Group and Antibody Screen (also referred to as a 'Group and Save')**

It is commonplace for a patient to have a blood group and antibody screen sample as part of a pre-operative assessment, on admission to hospital and if they are likely to require blood/blood components in the next few days. The sample will also allow identification of red cell antibodies and highlight potential issues with crossmatching. If a valid blood group and antibody screen is already held within the laboratory (following the two sample rule, see section 5.6), this enables compatible blood/blood components to be requested from the Hospital Transfusion Laboratory with minimal delay.

5.9.2.1. The patient's blood group and antibody screen results are stored on the Hospital Transfusion Laboratory Information Management System (LIMS).

5.9.3 **A Crossmatch Request**

If a patient requires blood/blood components or is undergoing a procedure which has been identified as having a potential for peri-surgical blood use as per the MFT MSBOS (Maximum Surgical Blood Ordering Schedule) a crossmatch request is required. Note: The MSBOS must be consulted for appropriate red cell ordering for surgical procedures.

5.9.3.1 Pre-transfusion samples should be sent to the Hospital Transfusion Laboratory at least 24-48 hours before surgery, to ensure that compatible red cells can be obtained. Surgery should not commence until the required red cells are in the local theatre blood fridge. In the event of an emergency where surgery must proceed and compatible blood has not been found, please contact the consultant for transfusion within working hours (or on call Haematologist out of hours) for clinical advice.

5.9.3.2 Member of staff must specify the exact date and time that they require the blood for their patients e.g. date/time of surgery or treatment within the HIVE request. All requests will currently default to four hours ahead of the request time.

See section 6.10 for returning blood/blood components to stock.

**5.10 Recording of Phone Calls to the Hospital Transfusion Laboratory**

Digital telephone recordings of the calls received by the Hospital Transfusion Laboratory (including the major haemorrhage phone) are undertaken for quality monitoring purposes.

## 5.10 **Requesting Blood/Blood Components** – By Urgency

| Urgency of blood | How to order | Notes |
|---|---|---|
| **Major Haemorrhage**<br>Blood required: Now | Access emergency group O blood* from satellite fridges if required (see section 1.2 for locations).<br><br>**Call 2222 to activate the major haemorrhage protocol** at all MFT sites. | Pre-thawed FFP is available on site at ORC and will accompany red cells in MHP pack 1. For all other sites, plasma, once defrosted, will follow red cells.<br><br>Notify the Hospital Transfusion Laboratory if emergency group O blood has been used. |
| **Emergency**<br>Blood required: Within 20 minutes<br><br>Blood group compatible, uncrossmatched blood can be provided in an emergency using electronic issue (E.I.) if the patient is valid# | Access emergency group O blood* from satellite fridges if required (see section 1.2 for locations).<br><br>Order emergency blood/blood components or products using HIVE. | Notify the Hospital Transfusion Laboratory if emergency group O blood has been used.<br><br>**Phone the Hospital Transfusion Laboratory** to communicate urgency and requirements (see section 1.1 for contact details). |
| **Urgent**<br>Blood required: 1-2 hours§<br><br>Group compatible, crossmatched blood can be provided in approximately 45 minutes§ | Order urgent blood/blood components or products using HIVE. | **Phone the Hospital Transfusion Laboratory** to communicate urgency and requirements (see section 1.1 for contact details). |
| **Routine**<br>Blood required: Within 4 hours§ | Order routine blood/blood components or products using HIVE. | No phone call required. |
| **Planned Date/Time**<br>(e.g. pre-operative) | Order planned blood/blood components or products using HIVE. | Provide at least 24-48 hours notice to ensure provision of the best matched blood. |

***Group O D positive blood may only be selected from satellite fridges only for males who are 18 years and over**. For everybody else (or if unsure of sex), select group O D negative blood.

# **Electronic Issue (E.I):** Patient valid for electronic issue if two valid samples in the lab (one in the last 72 hours), red cell antibodies, no bone marrow/stem cell transplant and not within 3 months of a solid organ transplant. Infants under 1 cannot have blood issued by E.I.

§**Note:** Turnaround times may be increased in the presence of antibodies or special requirements.

5.10.1. The presence of red cell antibodies or special requirements may cause a delay in the provision of compatible components. In an emergency, do not delay blood transfusion. Speak to the Hospital Transfusion Laboratory to discuss the clinical urgency and the provision of best matched blood on site (with Consultant Haematologist input).

**5.11 Communicating Emergency/Urgent Requests to the Hospital Transfusion Laboratory**

5.11.1 For all emergency and urgent request, contact the Hospital Transfusion Laboratory by phone to discuss the urgency and patient requirements.

5.11.2 The following information is required when discussing an emergency/urgent request:

- Patient's legal surname
- Patient's legal forename
- Patient's date of birth
- Patient's Medical Record Number (referred to as 'MRN')
- Patient's sex (as assigned at birth)
- Confirm degree of urgency (timescale blood/blood component required)
- Clinical details (including if pregnant)
- Number and type of blood/blood component(s) required
- Special requirements (see section 5.3)
- Confirm location of patient
- Name of patient's consultant
- Contact details for requester (name and bleep number)

The laboratory will record all such requests.

5.11.3 It is acceptable to make telephone requests for platelets, fresh frozen plasma (FFP) and cryoprecipitate however, requests **must** be followed up by a HIVE order.

5.11.4 All emergency blood samples for transfusion must be accompanied by a telephone call to the Hospital Transfusion Laboratory.

## 6 Collection of Blood/Blood Components and Products from the Hospital Transfusion Laboratory or Satellite Blood Fridges and Delivery to Clinical Areas

6.1 Red cells, fresh frozen plasma (FFP), solvent detergent FFP (Octaplas), anti-D, prothrombin complex concentrate (PCC, Octaplex) and human albumin solution (HAS) must only be stored in authorised satellite blood fridges.

6.2 Platelets and cryoprecipitate are collected directly from the Hospital Transfusion Laboratory and taken to the clinical area. They are **not** stored in the satellite blood fridges. Both platelets and cryoprecipitate are stored at **room temperature**.

6.3. All staff involved in the collection of blood/blood components from the Hospital Transfusion Laboratory or satellite blood fridges, must receive initial competency training and then will be given barcode access on successful completion. Reassessment occurs every 2 years via the MFT e-Learning hub.

6.4 Line Managers must identify which members of staff require training, ensure training is undertaken and are encouraged to keep local records.

For barcode activation please email: practitioners.transfusion@mft.nhs.uk

**6.5 Initiating Blood/Blood Component Collection by Clinical Area**

Porters carrying out collection will require booking via the HIVE system.

6.5.1. An emergency porter can be contacted via Switchboard across all sites and may be used for the urgent delivery of blood/blood components (such as platelets) or products (such as prothrombin complex concentrate (PCC, Octaplex). The location of where the porter is required to collect the item from must be clearly communicated (e.g. satellite blood fridge location).

6.5.2 All components and products kept at room temperature will be stored in the Hospital Transfusion Laboratory.

### 6.6 Confirmation Before Collection that the Blood/Blood Components and Products are Ready

6.6.1. Staff who have completed their blood administration/collection competency and who have an activated BloodTrack barcode, can access the BloodTrack and Enquiry system to:

- Locate, track, and review the status of your patient's blood/blood components. This includes checking the type of component and/or products available, their location and the number of units available.
- The dereservation date and time of the units can be checked by double clicking on the green bar. This will indicate the date and time when the component will not be longer available and also provides you with an expiry date for the component. Contact the Hospital Transfusion Laboratory if blood is required past this date and time for advice.
- Once the transfusion of a unit has begun, this can be fated in the BloodTrack Enquiry. The Trust has a legal requirement to confirm every component's final fate.

### 6.7 Accessing Emergency Group O Blood and Products from Satellite Blood Fridges

6.7.1. To access emergency group O blood, Human Albumin Solution (HAS) or Prothrombin Complex Concentrate (PCC) (see section 1.2 for locations within your MFT site) staff must have a barcode following blood collection training and their personal 4-digit numerical pin number.

6.7.2 Scan your barcode and input your pin number on the emergency touch screen. This screen will default to automatic release at locations which only stock group O, D negative blood. In other locations, it will ask what type of component you wish to collect 'red cells', 'fresh frozen plasma' or 'neonatal red cells'. If red cells are required, at some locations, it will ask for confirmation of the patient's age and sex (assigned at birth). The fridge will then open and allow staff to scan the component based on the user selection.

6.7.3 **Emergency Group O Blood Group (Uncrossmatched)**

Uncrossmatched, O D positive blood may only be selected from satellite fridges for males who are 18 years and over. For everybody else (or if unsure of sex), select group O D negative blood.

6.7.4 Inform the Hospital Transfusion Laboratory promptly when accessing emergency group O D negative (or D positive) blood to ensure replacement units can be issued. Give the Hospital Transfusion Laboratory staff the patient's details including the patient's full legal name, MRN (Medical Record Number) and date of birth if known.

6.7.5 Fill in the blood component tag on emergency units, include the patient's full legal name, MRN (Medical Record Number) and date of birth. The staff member should also sign and date the tag. Note: An addressograph label may be used. Once completed, the blood component tag must be returned to the Hospital Transfusion Laboratory.

6.7.6 ***Difficulty Accessing a Blood Fridge in an Emergency***

If you cannot access the blood fridge, **contact your local Hospital Transfusion Laboratory immediately** who will remotely open the fridge.

**6.8 The Transport of Blood and Blood components from Blood Fridges**

6.81. On delivery of blood, blood components and products to the clinical area then trained staff will confirm their receipt by scanning the barcode of the person making the delivery.

6.8.2 For the transportation of blood/blood components to a clinical area, use the designated red cell, plasma and platelet plastic bags. Do not transport platelets in the same bag with blood.

6.8.3 If blood is returned to the Hospital Transfusion Laboratory, it can be scanned directly into the main issue fridge within 30 minutes of removal. Return of units outside of this time will result in disposal.

### 6.9 Delivery and Receipt of Blood/Blood components in Clinical Area – Handling of Blood Products on Delivery

- Blood **must not** be placed in any fridge other than a designated blood fridge.
- Fresh frozen plasma (FFP), Human albumin solution (HAS), anti-D and Prothrombin complex concentrate (PCC) can also be stored in a blood fridge.
- **Cryoprecipitate** must be kept at **room temperature** once it has thawed, do not store in a blood fridge.
- **Platelets** must be kept at **room temperature** and must not be stored in the blood fridges. On delivery to the ward, platelets must be administered immediately.

6.9.1. The Hospital Transfusion Laboratory will not be automatically notified if emergency group O blood, human albumin solution (HAS) and/or PCC has been removed from a satellite blood fridge. To ensure emergency stock is replaced promptly, contact the Hospital Transfusion Laboratory urgently with the patient's details, complete the blood component tag and return to the laboratory as soon as possible.

6.9.2. The satellite blood fridges are temperature controlled and monitored daily by the Hospital Transfusion Laboratory system. If the fridge does alarm, ensure the door of the blood fridge is closed and then inform the Hospital Transfusion Laboratory staff immediately. The alarm on the fridges must not be deactivated.

### 6.10 Returning Blood/ Blood Components to Stock

6.10.1 Staff must specify the exact date and time when they require the blood/blood component for their patients on the request form e.g. date/time of surgery or treatment.

6.10.2 All blood/blood components and/or products for named patients are **returned to stock 24 hours** after the date and time that was requested for if not used.

6.10.3 The BloodTrack Enquiry system shows the dereservation date and time the blood/blood component will be returned to stock.

6.10.4 If your patient no longer requires the component/product, contact the Hospital Transfusion Laboratory to organise for this to be returned. Returning as soon as you know a component is no longer required supports re-issue and reduces wastage.

### 6.11 BloodTrack System Downtime

In the event of a system down time the following procedures should be followed:

- Porters and clinical staff will follow the downtime procedure for Blood Transfusion.
- Clear fixed signage will be placed at the satellite blood fridges alongside clear instructions when putting blood **in** and taking blood **out** of the fridge.
- A downtime log will be available beside the satellite blood fridge affected.
- Instructions on the rear of the blood component tag must be followed to accurately evidence cold chain storage.

### 6.12 BloodTrack and Enquiry – Barcodes and Pin Numbers

If a member of staff forgets their pin number for BloodTrack, contact the Transfusion Practitioners to re-set. Out of hours, revert to administration checks without using the electronic BloodTrack arrival and end of transfusion scan on blood enquiry (also applicable if the blood enquiry system is down), ensuring the blood component tag is signed and dated and returned to the Hospital Transfusion Laboratory.

### 6.12 Replacement BloodTrack Barcodes

Contact the Transfusion Practitioners to arrange a replacement barcode.

# 7 Prescribing Blood/Blood Components and Correct Documentation

## 7.1. Prescribing

7.1.1 Only a qualified medical doctor or approved non-medical prescriber (following additional training and application for permission by the Executive Hospital Transfusion Committee and local Divisional Governance) can prescribe blood/blood components. All transfusion requests are made via the HIVE system.

7.1.2 For blood and blood components, the prescriber will have the option to prescribe in units (for most adults and some older children) or mLs (for neonates, infants, children, low body weight adults and adults at risk of TACO, see section 7.2). If prescribing in mLs, the rate will be required within HIVE to be expressed as 'mLs/hour'. If not appropriate, or if additional information is required, document this in the comments box.

7.1.3 When prescribing blood and blood components: the time/date required, number of units or volume, reason for request, pregnancy status and any special requirements must be entered on HIVE.

7.1.4 It is important that pregnant women and people are identified in order for the Hospital Transfusion Laboratory to provide the correct special requirements (e.g. CMV negative).

7.1.5 In a major haemorrhage, if a prescription cannot be written prospectively, verbal authorisation by a qualified doctor for blood/blood component administration must be witnessed by 2 qualified members of staff. This must be documented in the patient's notes retrospectively including the names of the staff members present.

## 7.2. Transfusion Associated Circulatory Overload (TACO)

7.2.1 Transfusion associated circulatory overload (TACO) is the leading cause of death secondary to transfusion. It can affect both adults and children. To reduce this risk, a formal pre-transfusion assessment should be undertaken whenever possible for all patients receiving a blood transfusion (especially if older than 50 years or weighing less than 50kg) and mitigating actions taken (SHOT, 2020). The figure below is the Serious Hazards of Transfusion (SHOT) TACO checklist which has been formatted as an electronic version within HIVE.

Figure 18b.1: TACO pre-transfusion checklist

| TACO Checklist | Patient Risk Assessment | YES | NO |
|---|---|---|---|
|  | Does the patient have any of the following: diagnosis of 'heart failure', congestive cardiac failure (CCF), severe aortic stenosis, or moderate to severe left ventricular dysfunction? | | |
| | Is the patient on a regular diuretic? | | |
| | Does the patient have severe anaemia? | | |
|  | Is the patient known to have pulmonary oedema? | | |
| | Does the patient have respiratory symptoms of undiagnosed cause? | | |
|  | Is the fluid balance clinically significantly positive? | | |
| | Is the patient receiving intravenous fluids (or received them in the previous 24 hours)? | | |
| | Is there any peripheral oedema? | | |
| | Does the patient have hypoalbuminaemia? | | |
| | Does the patient have significant renal impairment? | | |

| If Risks Identified | YES | NO |
|---|---|---|
| Review the need for transfusion (do the benefits outweigh the risks)? | | |
| Can the transfusion be safely deferred until the issue is investigated, treated or resolved? | | |

| If Proceeding with Transfusion: Assign Actions | TICK |
|---|---|
| Body weight dosing for red cells | |
| Transfuse a single unit (red cells) and review symptoms | |
| Measure fluid balance | |
| Prophylactic diuretic prescribed | |
| Monitor vital signs closely, including oxygen saturation | |

| | |
|---|---|
| Name (PRINT): | |
| Role: | |
| Date: | Time (24hr): |
| Signature: | |

**Due to the differences in adult and neonatal physiology, babies may have a different risk for TACO. Calculate the dose by weight and observe the notes above.**

*TACO=transfusion-associated circulatory overload*

Serious Hazards of Transfusion: TACO Checklist (SHOT, 2020)

7.2.2 The risk of TACO can be minimised by weight-adjusted red cell dosing for at risk patients, and medical management of anaemia, where possible. The red cell calculation shown below helps estimate the volume of red cells required to meet the target haemoglobin (SHOT, 2020).

**Body weight dosing for red cells:**

Volume to transfuse [mL] =

(Target Hb [g/L] – Actual Hb [g/L]) x Weight [kg] x 0.4

*The calculation above can help inform the number of units/mLs to be requested. The volume of an adult unit of red cells is 220 - 340mL (SHOT, 2020).*

### 7.2.3 TACO Checklist on HIVE

The TACO checklist is located in the 'Blood Administration Navigator'. Perform a TACO checklist prior to ordering red cells for a patient. If more than one unit of red cells are requested within a 24-hour period, only one checklist is required unless there has been a change to the patient's TACO risk factors. If the fluid status of the patient has changed prior to administration, re-complete a TACO checklist and review if further actions are required prior to proceeding.

### 7.2.4 For those under 1 year:

Due to the differences in physiology, neonates and infants may have a different risk for TACO than adults. Calculate the dose by weight using an age/indication specific calculation or the transfusion formula above where applicable. Observe the assessment and actions below.

TACO is a SHOT reportable incident.

### 7.3 Blood/ Blood Components for Adults: Guidance for Prescribers

| Component<br>*(accepted abbreviation)* | Recommended dose | Recommended duration<br>If special instruction for transfusion rate or administration is required, state in the 'comments' box within HIVE. |
|---|---|---|
| **Red Cells** or **Blood** (no accepted abbreviation)<br><br>*See MFT 'Adult red cell guidelines'* | *As per clinical indication and national indication codes.*<br><br>**Single Unit Transfusion:** Best Practice<br><br>In the absence of active bleeding, consider a single unit, red cell transfusion (or equivalent if dosed by weight) for stable patients.<br><br>Repeating the full blood count, review the patient's symptoms and fluid status prior to proceeding to the second and each subsequent unit (or equivalent).<br><br>**Red Cell Dosing by Weight:**<br><br>For non-bleeding adults identified as high risk of TACO, consider red cell dosing by weight:<br><br>Volume to transfuse [mL] =<br>(Target Hb [g/L] – Actual Hb [g/L]) x<br>Weight [kg] x 0.4 | For stable, non-bleeding adults, each unit of red cells can be routinely transfused over 1.5 or 2 hours (90 – 120 minutes).<br><br>Consider a slower transfusion rate for patients at risk of TACO and observe closely.<br><br>The transfusion of red cells must be completed within 4 hours of removal from the fridge.<br><br>More rapid transfusion rates can be used as per clinical status of the patient, e.g. major haemorrhage where units may be required as 'stat'. |
| **Platelets** (Plts)<br><br>*See MFT 'Guidelines for the Clinical use of Platelets in Adults'* | One 'adult therapeutic dose' (ATD)<br><br>This can be ordered as '1 unit' within HIVE<br><br>The average volume of a platelet 'dose'/unit = 200 - 300mLs | Routinely, 1 ATD (unit) can be transfused over 30 – 60 minutes.<br><br>The transfusion rate can be increased in clinically urgent situations. |
| **Fresh Frozen Plasma** (FFP) and **Solvent Detergent FFP** (SD-FFP or Octaplas)<br><br>*See MFT 'Guidelines for use of Fresh Frozen Plasma – Adults'* | 10 –15 mL/Kg<br><br>The average volume of FFP = 270mLs.<br><br>The volume of SD-FFP = 200mLs.<br><br>The average dose for a 70kg adult is 4 units. | Each unit of plasma is typically administered over 30 minutes (or 10-20mL/kg/hour).<br><br>More rapid transfusion rates can be considered (e.g. for major haemorrhage). |
| **Cryoprecipitate** (Cryo) | Two 'pooled' units<br><br>The average volume of each cryoprecipitate 'pooled' unit = 220mLs.<br><br>Two pooled units will raise the fibrinogen level by approximately 1 g/L in average adult. | Each unit of cryoprecipitate is typically administered over 30 minutes (or 10-20mL/kg/hour).<br><br>Infusion must be completed within 4 hours from defrosting. |

**Note:** For guidance on administration of granulocytes/buffy coat, see section 8.4.10.

## 7.4. Blood/ Blood Components for Paediatrics: Guidance for Prescribers

| Component | Recommended dose<br>*See Appendix A and B* | Recommended duration<br>If special instruction for transfusion rate or administration is required, state in the 'comments' box within HIVE. |
|---|---|---|
| **Red Cell Concentrate**<br>**Available as:**<br><br>*Paedipacks*<br>Small volume transfusions for neonates and infants <1 year<br>*Mean volume 45mLs*<br><br>Adult red cell units for children > 1 year<br>*Mean volume 280mLs* | Volume to transfuse [mL] = (Desired Hb [g/L] – Actual Hb [g/L]) x Weight [kg] x 0.4<br><br>Haemoglobin = Hb<br>In chronic anaemia the Hb should not be increased too rapidly and a volume of no more than 5-10mL/kg/day is recommended.<br>Note: 10mL per kg will raise Hb by ~25g/L | Duration as per clinical indication or as per departmental protocol<br><br>For non-bleeding infants/children, administer at a maximum rate of 5mL/kg/hour<br><br>The transfusion of red cells must be completed within 4 hours of removal from the fridge |
| **Platelet Concentrates**<br>**Available as:**<br><br>'Neonatal/paediatric' unit for neonates and infants <1 year<br>*Mean volume 63mLs*<br><br>Standard 'adult therapeutic dose' pooled or apheresis platelets for children >1 year<br>*Mean volume 200-300mLs* | For infants/children:<br>If weight <15kg: dose at 10-20mL/kg (max = 1 dose/unit)<br>If weight >15kg:<br>consider one adult therapeutic dose<br>Where single 'neonatal/paediatric' packs/units are available dose as follows:<br><5kg 10mL/kg<br>5-10kg 1 single neonatal/paediatric unit<br>11-19kg 2 single neonatal/paediatric units<br>>20kg 1 adult dose | Administer at a maximum rate of 10-20mL/kg/hours per unit<br><br>Maximum administration time is 30 minutes per dose/pack/unit |
| **Fresh Frozen Plasma** (FFP)<br>**Available as:**<br><br>'Neonatal/infant FFP' for neonates and infants <1 year<br>*Mean volume 65mLs*<br>Standard UK FFP for children >1 year<br>*Mean volume 270mLs*<br>or<br>Solvent Detergent FFP (SD-FFP/ Octaplas)<br>*Mean volume 200mLs*** | For infants/children, the typical dose of plasma is 15 –20 mL/Kg<br><br>**It is no longer a requirement for those born on or after 1st January 1996 to receive solvent detergent plasma or methylene blue cryoprecipitate. See section X. | Typically administer at a rate of 10-20mL/kg/hour per unit |
| **Cryoprecipitate**<br>**Available as:**<br>'Neonatal/infant' cryoprecipitate single units for neonates and infants <1 year<br>*Mean volume 53mLs****<br><br>Standard UK cryoprecipitate for children >1 year<br>*Mean volume 220mLs* | The typical dosing is 5-10mL/kg (using the higher value for active bleeding)<br><br>One - two 'pooled' units may be used for older children depending on weight, maximum dose is 2 'pooled' units | Typically administer at a rate of 10-20mL/kg/hour per unit<br><br>Infusion must be completed within 4 hours from defrosting |

## 7.5 Consent for Blood Transfusion and Documentation

7.5.1 In 2020, SaBTO (Advisory Committee on the Safety of Blood, Tissues and Organs) released new national consent recommendations. The key recommendations are summarised below:

7.5.2. **Which patients require to be consented for transfusion?**

- Patients who are 'likely' or 'definitely' require a transfusion must be consented.
- Consent is required for all blood and blood components:
  - Red cells
  - Platelets
  - Plasma (FFP) *including* Octaplas (SD-FFP)
  - Cryoprecipitate
  - Granulocytes
  - Autologous blood (including intraoperative cell salvage)
  - Blood exposure (including circuit primes and ECMO)

Consent is not required for blood products (such as human albumin solution, prothrombin complex concentrate anti-D and immunoglobulin)

7.5.3 Prior to giving consent, the patient needs to be informed (provide **both appropriate verbal and written information)**. For where to find the national patient information document, see section 7.3. Information should be provided in an understandable way and tailored to what the patient wants to know and what the patient feels is an acceptable risk and what is not (the concept of 'material risk').

The discussion between patient and clinicians should be part of an informed, active, shared-decision making process.

7.5.4. Consent also needs to be valid (the patient is required to have capacity to make the voluntary, informed decision).

7.5.5. Consent for transfusion needs to detail the following:

- The reason for the transfusion
- The risks and benefits

- The transfusion process
- Any transfusion needs specific to them
- Any alternatives that are available, and how they might reduce their need for a transfusion
- That they are no longer eligible to donate blood (unless in certain circumstances such as for the national COVID-19 convalescent plasma trials)
- That they are encouraged to ask questions

7.5.6. Provide the patient and their GP with copies of the discharge summary or other written communication that explains:

- The details of any transfusions they had
- The reasons for the transfusion
- Any adverse events
- That they are no longer eligible to donate blood

7.5.7 **Who can take consent for transfusion?**

A 'healthcare practitioner' can consent for transfusion (such as doctor or advanced nurse practitioner) if trained, deemed competent and have sufficient knowledge and experience of transfusion.

7.5.8 **Duration of consent**

Consent for transfusion can be regarded as:

- **Long term** - e.g. no longer than every 12 months for patients who have frequent, long-term transfusion requirements such as those with a haemoglobinopathy).
- **Short term** – which may be bespoke (e.g. no longer than 3 months) for those scenarios where consent has been provided for a specific procedure or admission.

Patient must be reminded that they can change their decision at any time.

7.5.9. **Providing retrospective information**

Patients who lacked capacity when they were transfused and regained capacity post-transfusion (e.g. in an emergency) should receive retrospective information (verbal, written or both). See section 7.5.4 for the patient

information document: *'Information for patients who have received an unexpected blood transfusion'.*

7.5.10 **Documentation of Consent**

The discussion regarding consent for transfusion is required to be clearly documented within the patient notes. An electronic 'Consent for Transfusion of Blood and Blood Components' will be available on HIVE from late 2022 and will capture the requirements for the documentation (above).

7.5.11Follow the MFT 'Consent for Examination or Treatment

Consent Policy' for consent guidance relating to patients without capacity and parent's/care givers providing consent for children.

7.5.12 **Confirmation Prior to Administration**

Verbal reconfirmation of consent should be sought prior to administration and is a step in the independent two person, pre-transfusion bedside checks (see section 8).

7.5.13 **Communication**

If a patient has additional communication needs (for example, arising from a disability or if the patient's first language is not English), members of staff must provide information for consent using an interpreter, signer, or other appropriate communication support.

7.5.14 **Patient Information Leaflets**

*'Receiving a Blood Transfusion'* is a standardised patient information document produced by the UK and Ireland Blood Transfusion network in response to the updated Advisory Committee on the Safety of Blood, Tissue and Organs (SaBTO) consent recommendations. It can be accessed through the MFT Blood Transfusion Policies page or directly via the NHSBT website: https://hospital.blood.co.uk/patient-services/patient-blood-management/patient-information-leaflets/

Leaflets also available via the MFT policies page and the NHSBT website link are: *'Information for patients who have received an unexpected blood transfusion'* and *'Information for patients with sickle cell disease who may need blood transfusion'*.

## 8 Administration of Blood/Blood Components and Pre-Administration Checks.

8.1 Two qualified members of staff (defined below) must check each blood component unit independently at the bedside prior to administration. It is the qualified members of staff administering the blood who must perform the checks.

8.2 **An 'independent two-person check':** This is a term used to describe when one person confirms the identification and information is correct followed by a second checker who would do this separately. Two people performing the pre-administration checks together/simultaneously is not an independent two-person check.

All pre-administration checks must include confirmation of positive patient identification (PPID) in the correct way (see section 5.4).

**8.3.1 Pre-Administration Checks –** *1. Identifying the correct patient*

8.3.1 Using positive patient identification (PPID), verbally confirm the patient's full legal name and date of birth using an open question such as *'can you confirm your full legal name and date of birth?'*.

8.3.2 Ensure this information exactly matches the patient's wristband and scan the wristband to open the patient's record within HIVE. **Confirmation of positive patient identification must be performed before scanning of the patient's wristband** to open an electronic patient record on HIVE for blood/blood component administration.

a) Once the patient record is open, confirm the MRN (Medical Record Number) matches on the patient record and patient wristband.

b) Check that the information on the blood component compatibility label matches the patient record and wristband.

**8.3.3 Pre-Administration Checks –** *2. Checking the component and patient requirements*
An independent, two-person, pre-transfusion bedside checklist on HIVE is required to be performed prior to administration.

8.3.4 Separately, checkers must confirm:

- Whether consent has been obtained
- Whether a TACO checklist has been performed (note: if the patient has had a clinically significant change in fluid status since the TACO checklist has been performed, this should be reviewed)
- The patient has confirmed their legal full name and date of birth
- The details provided by the patient and the patient's MRN match the a) patient wristband b) blood component compatibility label c) prescription.
- The component is the same as prescribed
- The unit number on the component bag is the same on the blood component compatibility label.
- The blood group of the blood component is compatible with the patient's known blood group (or as per the haematology transplant protocol)
- The component matches the patient's special requirements
- The component is clear from clots, leaks and discolouration.

Repeat this process for all components which are to be administered.

8.3.5 If there is a discrepancy do not proceed and inform the Hospital Transfusion Laboratory immediately. If the wristband is on the incorrect patient, absent or unreadable, stop and ensure a new wristband is in place using the correct process for positive patient identification prior to proceeding.

8.3.6 The final administration check must always be next to the patient (not remotely in a clinical room or at the nursing station). Once all checks have been successfully completed, the transfusion must be started promptly.

8.3.7 If the checking process is interrupted, the entire process must re-start from the beginning.

8.3.8 The independent, two-person, pre-transfusion bedside checks must be performed by two qualified members of staff as defined below:

| First Checker | Second Checker |
|---|---|
| Registered Nurse who is trained and competent in IV therapy<br><br>Registered Midwife who is trained and competent in IV therapy<br><br>Registered Paediatric Nurse who is trained and competent in IV therapy<br><br>Registered Operating Department Practitioner (ODP) who is trained and competent in IV therapy<br><br>Registered Doctor<br><br>Registered Agency Nurse who is trained and competent in IV therapy and holds a Trust Contract | All staff listed as first checkers<br><br>A Trust Registered Nurse/Midwife who is yet to complete their IV therapy course or Qualified Agency Nurse can be second checkers |
| **Accountability that the correct checking procedure has been undertaken rests with both staff members carrying out the independent checks at the bedside.**<br><br>**Note:** The following staff **must not** be involved in the checking procedures:<br>Student Nurses, Student Midwives, Trainee Operating Department Practitioners (ODPs), Medical Students, Assistant Practitioners, Clinical Support Workers, Nursery Nurses and Healthcare Assistants. | |

8.3.9 It is the responsibility of the student nurses to go with the two trained staff and observe the administration and checking procedures.

8.3.10 It is a requirement of the Trust that competency in blood administration must be assessed and signed off.

8.3.11 Staff involved in the blood administration process will be asked to complete a 3 yearly blood administration competency assessment. Clinical Directors/Consultants/Ward Managers/Lead Nurses/Modern Matrons will be asked to ensure compliance of their staff. Completion of training will be recorded on to the Trust education database and a paper copy retained in the staff members portfolio.

### 8.4 Blood and Blood Component Administration

8.4.1 All blood and blood components must be transfused through a 170 – 200 micron filter (blood administration set) using an infusion pump which is available in clinical areas.

8.4.2 The only area in which infusion pumps may not be applicable in emergencies is A&E, theatres, critical care and manual or machine exchange transfusion. All other areas should now have infusion pumps (neonatal Units are at present continuing to use syringe drivers).

- Do not add any medication into a unit of blood or a blood component for administration.

- Blood and blood components should have a dedicated line for transfusion.

8.4.3 If a transfusion is completed uneventfully, the empty blood component pack and administration set must be discarded into clinical waste.

### 8.4.4 Administration Guidance

| Blood/Blood component | Administration details | Further information |
|---|---|---|
| **Red Blood Cells** | Use a 170 – 200 micron filter (blood administration set) via infusion pump.<br><br>*The administration set must be changed at least 12-hourly during continuous blood administration. | Maximum infusion time is 4 hours.<br><br>There should be no more than 30 minutes between removing the component from the temperature-controlled environment and starting the transfusion (BSH, 2009). |
| **Platelets** | Use a 170 – 200 micron filter (blood administration set) via infusion pump.<br><br>**Do not** put platelets through a giving set that has been already used to administer other blood/blood components. A new blood administration set must be used. | Platelets should be infused immediately upon receipt to prevent deterioration e.g. clumping.<br><br>In the event of a delay to administration of greater than 30 minutes or platelets not required/unused, return to the Hospital Transfusion Laboratory for appropriate storage on an agitator. |
| **Fresh Frozen Plasma** (FFP) | Use a 170 – 200 micron filter (blood administration set) via infusion pump.<br><br>FFP must be used within the time specified from thawing. The time can be found on a label applied by the transfusion laboratory on the front of each unit. | If FFP has been thawed and is kept in a monitored Hospital Transfusion Laboratory or blood satellite fridge at 4ºC it can be used up to 24 hours from the time of thawing. |
| **Cryoprecipitate** | Use a 170 – 200 micron filter (blood administration set) via infusion pump. | Cryoprecipitate **must be used within 4 hours** of thawing and never placed in a blood fridge. |
| **Granulocytes**<br><br>*See section 8.4.10 for further information | Use a 170 – 200 micron filter (blood administration set) via infusion pump.<br><br>Do not transfuse using a Pall filter | The whole dose should be infused over 1-2 hours |

### 8.4.5 Red Cells

- Red cells must be infused through a blood administration giving set and using a infusion pump to deliver the transfusion.
- On arrival to the clinical area, a red cell transfusion should be commenced promptly (within 30 minutes from a temperature-controlled environment).
- Red cells cannot be returned to a satellite blood fridge if out of temperature control for longer than 30 minutes. If this occurs, inform the Hospital Transfusion Laboratory.

### 8.4.6 Platelets

- Must be stored at room temperature
- Must never be placed in a blood fridge
- Must not be allowed to lie in contact with refrigerated blood
- Inspect the pack prior to transfusion e.g., signs of discolouration, visible clumping/aggregates or damage. If present do not proceed and contact the Hospital Transfusion Laboratory immediately.

### 8.4.7 Fresh Frozen Plasma (FFP) and Cryoprecipitate

- On requesting FFP or cryoprecipitate, it will usually be ready for collection 40 minutes after the request is made.
- If FFP arrives and is not required at the present time it can be placed in a blood fridge if within the 30-minute timeframe of being moved out of one fridge into another.
- Any unused FFP must be returned to the Hospital Transfusion Laboratory so that it can be recorded on to the Laboratory Information Management System (LIMS).
- FFP and cryoprecipitate should have no red cell contamination and therefore does not have a 'D' status. The units however, must be ABO compatible.

8.4.8 There are two different types of plasma:

- Standard FFP (sourced from UK blood donors)
- Solvent detergent treated pooled human plasma treated SD-FFP (Octaplas)

8.4.9 Since 2019, SaBTO no longer recommend solvent detergent treated, non-UK sourced, plasma or methylene blue treated cryoprecipitate for patients born on or after 1st January 1996.

At MFT, the following patients should continue to receive SD-FFP (Octaplas):

- Plasma exchange for TTP (thrombotic thrombocytopenic purpura)
- Patients with inherited factor deficiencies where no recombinant form of the factor replacement exists
- Other uses should be approved by a Consultant Haematogist.

Stock of Octaplas may be limited, contact the Hospital Transfusion Laboratory if this is required (urgently if a plasma exchange is required).

**8.4.10 Granulocytes and Buffy Coats**

Therapeutic granulocyte transfusions may be indicated for patients who: i) have a severe neutropenia (< $0.5x10^9$/L) due to a congenital or acquired bone marrow failure syndrome *and* ii) are receiving active treatment to achieve disease remission *and* iii) have proven or highly probable fungal or bacterial infection that is unresponsive to appropriate therapy *and* iv) in whom neutrophil recovery is expected within weeks.

*8.4.11 Granulocytes*

Granulocytes can be requested by contacting the NHSBT consultant on call on: 0191 261 5063. The patient's details required include: blood group, red cell antibody status, CMV status and weight. Granulocytes are available from Tuesday-Saturday. There is a limited supply from NHSBT on a Monday and therefore this cannot be guaranteed. Where granulocytes cannot be provided, buffy coat may be offered in substitute.

8.4.12 A standard adult dose of granulocytes is **two pools** (or two pooled units). Each pool contains approximately $9x10^9$ granulocytes. Larger adults may receive up to three pool units/day. The mean volume = 207 mL per pool.

Children that weight less than 30 kilograms should receive **10-20 mL/kg** (maximum of two pooled units).

*8.4.12 Buffy Coat*

A dose of ten packs of buffy coats for adults and 10-20mL/kg for children less than 50kg (to a maximum of 10 packs) is recommended. Each buffy coat 'pack' is approximately 50mL.

*8.4.13 Red cell and Platelet Requirements*

Both granulocytes and buffy coats (standard dose) contain approximately 3 doses of platelets and therefore platelet transfusions are very rarely required whilst receiving treatment. As buffy coats have a high haematocrit, the need for concurrent blood transfusion should reduce. Venesection may be required if buffy coats are received daily for a patient who is not red cell dependent and therefore patients should be monitored.

*8.4.14 Administration (also see 8.4.3)*

- Both granulocytes and buffy coat will look like a unit of red cells
- A crossmatch sample is required to confirm compatibility prior to issue
- All packs must be irradiated and CMV compatible with the patient's requirements.
- Granulocytes and buffy coat are stored at room temperature in the Hospital Transfusion Laboratory.
- Check the expiry date prior to administration, granulocytes and buffy coat must be transfused within 24 hours of donation. If a unit expires at midnight and cannot be transfused within the timeframe, it must not be commenced. The clinician caring for the patient should discuss with the NHSBT consultant on call to review whether the risks and benefits are in favour of transfusing a short time past expiry, or of discarding the component.

### 8.5 Transfusion Observations

8.5.1 Observations taken prior to (<60 minutes prior to transfusion), during (between 15 and 29 minutes into the transfusion) and following (<60 minutes following the transfusion) must be clearly identifiable on observation charts.

8.5.2 A transfusion should only be administered where and when the patient can be clinically observed by clinical staff.

8.5.3 If a patient is unconscious, in a side room or may have difficulty communicating any signs or symptoms relating to a transfusion reaction, more frequent observations/monitoring is required.

8.5.4 Patients with learning disabilities, hearing or sensory impairment who are unable to communicate signs of symptoms relating to a transfusion reaction should be assessed in line with the Accessible Information Standards before the transfusion, (carers to be involved).

8.5.5 Clinical staff responsible for monitoring patients undergoing the transfusion of any blood component must be trained and knowledgeable of the signs and symptoms of transfusion reactions in line with the MFT Transfusion Reaction Policy. Where appropriate, patients should be encouraged to report signs and symptoms that may indicate a blood component reaction.

8.5.6 The rate of infusion should be adjusted to the prescribed rate. The fluid intake (from volume printed on blood component pack label) should be recorded on the patient's fluid balance chart in HIVE.

**8.5.7 If there are concerns that a patient is having a transfusion reaction, stop the transfusion immediately leaving the venous access insitu and re-check the details on the blood unit.** Refer to MFT 'Transfusion Reaction Policy'.

**8.5.8 Frequency of Transfusion Observations**

*Observations required:* Temperature, heart rate (pulse), respiratory rate, oxygen saturations and blood pressure.

- **Pre-transfusion** observations must be undertaken and documented less than 60 minutes prior to start of transfusion for all ages (neonates, infants, children and adults).

- Repeat the observations again at **15 - 29 minutes** for all ages.

- Continue with observations **every thirty minutes** until completion of the transfusion for neonates, infants and children (not a requirement for adults unless clinically indicated).

- **At the end of the transfusion** (<60 minutes following the completion of the transfusion), record a full set of observations for all ages.

- Additional observations may be recorded as per departmental care plans and the patient's clinical status.

8.6 **Intraoperative Cell Salvage (ICS)**

For intraoperative cell salvage advice and referrals please see section 1.1 for contact details specific for your site. Follow site specific policies.

8.7 **Blood Warmers**

8.7.1 The warming of blood and blood components is not recommended unless clinically indicated e.g. major haemorrhage (if time permits) or mixed/cold autoimmune haemolytic anaemia.

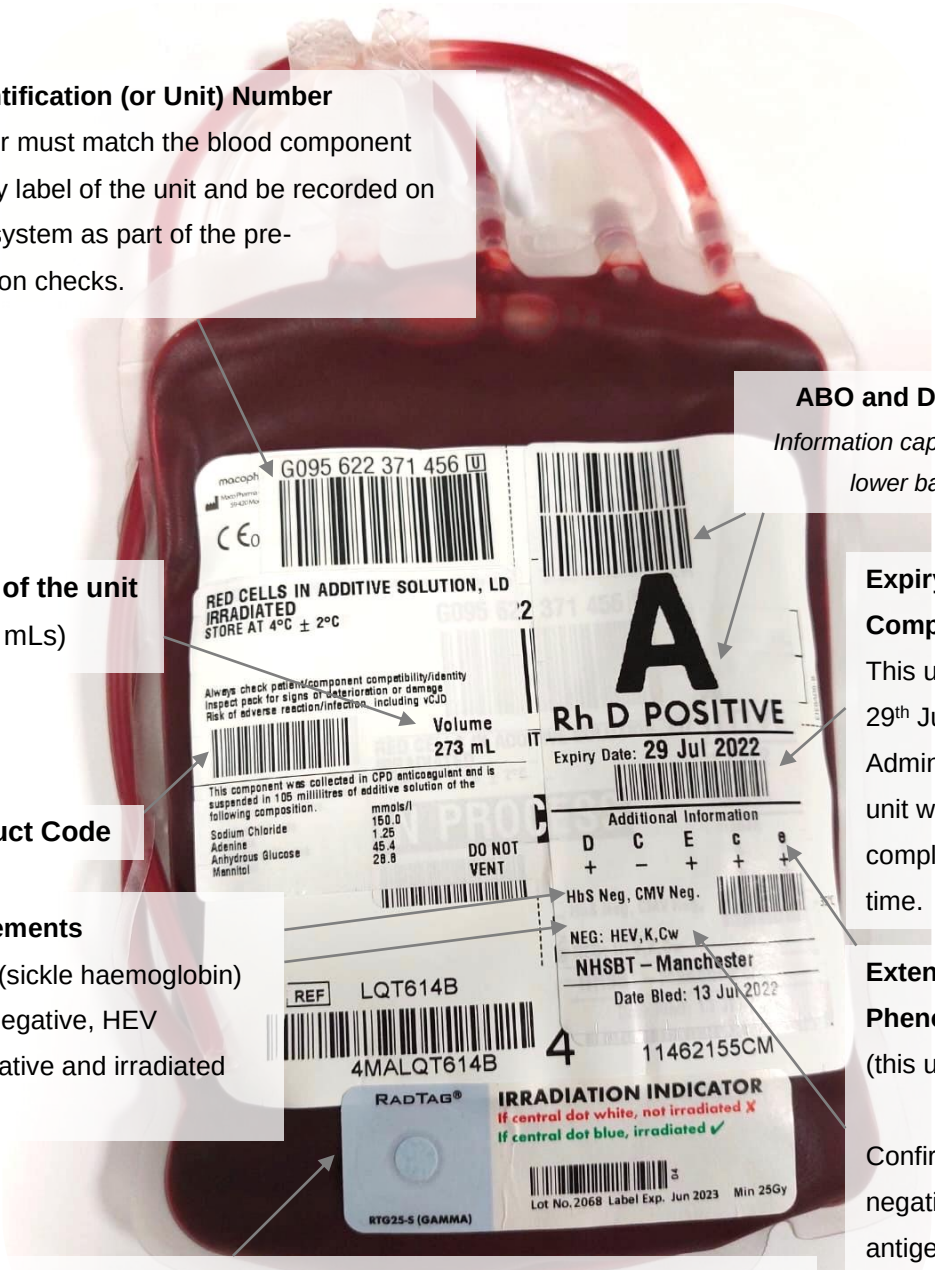
8.7.2 If blood warmers are used during and/or immediately after surgery, members of staff using the warmer must ensure they have had appropriate training. Blood warmers are available in the Neonatal Intensive Care Unit (NICU), Adult Haematology Day Units and Paediatric, Adult and Maternity Theatre suites.

8.7.3 For a patient who is receiving or due to receive blood using a blood warmer and is required to move to a different clinical area, ensure there is an appropriate member of staff trained to use a blood warmer in the new clinical area prior to transfer. If not, contact the medical team responsible for the patient.

**8.8. Information on a Unit of Blood** – An Adult Unit

8.8.1 BPAM facilitates the capture of information by scanning of the barcodes on the component. **Always ensure the full two person, independent, pre-transfusion bedside checks are carried out** including checking the details on the component match those on the blood component compatibility label.

**Donor Identification (or Unit) Number**
This number must match the blood component compatibility label of the unit and be recorded on the BPAM system as part of the pre-administration checks.




**Volume of the unit**
(in mLs)

**Product Code**

**ABO and D Blood Group**
*Information captured by scanning lower barcode only*

**Expiry Date of Component**
This unit expires on 29th July 2022 at 23:59. Administration of this unit will need to be complete before this time.

**Special Requirements**
This unit is HbS (sickle haemoglobin) negative, CMV negative, HEV (hepatitis E) negative and irradiated (see below).

**Extended Rh Phenotype** information (this unit is C-)

Confirmation of other negative red cell antigens. This unit also negative for K (Kell) and Cw.

**Irradiated Status:** A central blue dot on the 'RadTag' will confirm it has been irradiated. If the patient requires irradiated blood and this unit is not blue, do not administer and contact the Hospital Transfusion Laboratory.

**8.8.2 Information on a Unit of Blood** – A ‘Paedipack’.

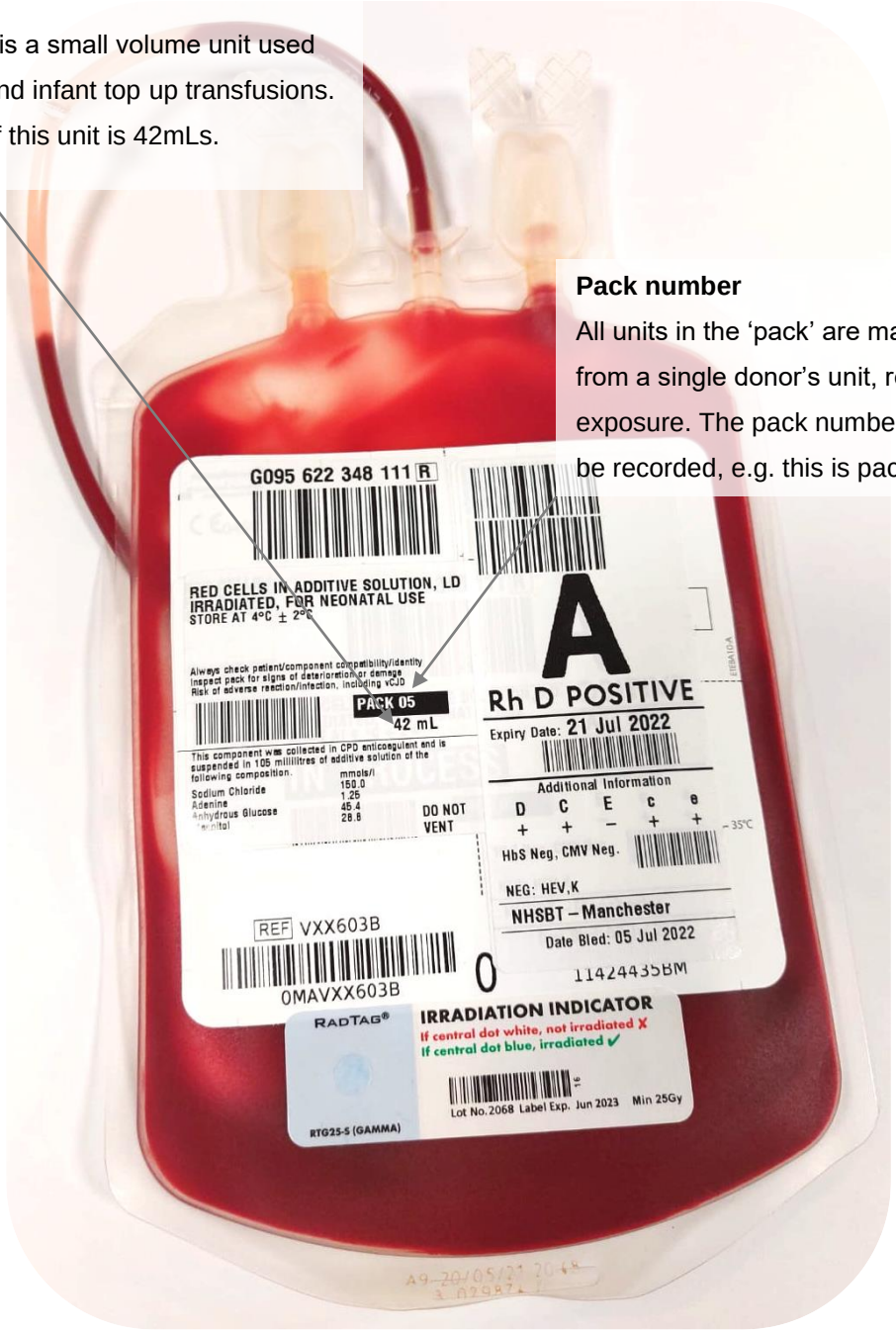
The features of a paedipack are similar to an adult unit. Please also refer to the annotated image in 8.8.1.

**Paedipack**

A ‘paedipack’ is a small volume unit used for neonatal and infant top up transfusions. The volume of this unit is 42mLs.

**Pack number**

All units in the ‘pack’ are manufactured from a single donor’s unit, reducing donor exposure. The pack number is required to be recorded, e.g. this is pack number 5.



8.9 **Blood Product Administration Module (BPAM) and Documentation**

8.9.1 BPAM is used for the administration of blood/blood components within HIVE. On completion of pre-administration checks and following the correct procedure for positive patient identification (PPID), nursing staff will scan the unit assigned for the patient. The 14 digit 'unit' number, blood group, product code and expiry date/time will be captured on scanning.

8.9.2 The start time of the transfusion will be recorded on BPAM once the confirmatory checks have been undertaken. At the end of the transfusion, the time is recorded by 'stopping' the transfusion within BPAM.

8.9.3 On the blood component tag, write the date, time of the transfusion and in addition to the signatures of the two people involved in the checking/administration procedure.

8.9.4 **Nursing Documentation**

Documentation must be made in the patient's electronic notes. When each unit was commenced and completed must be clearly recorded and accompanying observations during the transfusion must be available on the HIVE system.

**8.10 Confirming the Fate of the Blood/Blood Component**

8.10.1 It is a legal requirement to ensure 100% traceability for all blood and blood components. To achieve this, the fate of all blood/blood components must be recorded. The fate (via BloodTrack Enquiry) does not have to occur at the end of the transfusion, at MFT, nursing staff are encouraged to confirm the fate of the unit following completion of the 15-29 minutes transfusion observations.

8.10.2 The blood component tag attached to the bag is removed at the tear off section signed and dated and returned to the Hospital Transfusion Laboratory. Return by placing the tag(s) in a biohazard bag and podding them back to the Hospital Transfusion Laboratory via the pneumatic tube system or leaving them in a biohazard bag for the blood messenger service when the blood samples are collected.

8.11 **Night Transfusions**

8.11.1 The routine transfusion of blood/blood components should occur during working hours where possible. Where there is a clear clinical indication for transfusion overnight and, where there is sufficient staff to permit safe transfusion, night transfusions can proceed. If no clear indication for transfusion overnight, deferral of the transfusion to the following day, within working hours, should be considered. Do not delay the urgent transfusion of blood and blood components.

## 9 Incident reporting

9.1 **Serious adverse event:** A term to describe any untoward occurrence associated with the collection, testing, processing, storage and distribution of blood and blood components that might lead to death, life-threatening, disabling, or incapacitating conditions for patients *or* which results in, or prolongs, hospitalisation or morbidity.

9.2 **Serious adverse reaction:** A term to describe an unintended response in a blood donor or patient associated with the collection or transfusion of blood/ blood components that is fatal, life-threatening, disabling, incapacitating, *or* which results in, or prolongs, hospitalisation or morbidity**.**

**These events must be reported via the MFT incident reporting system.**

## 10 Transportation of Blood/Blood Components to and from other Hospitals

*- see accompanying flowchart in section 10.7*

10.1 **When Blood/Blood Components are Transported from Another Hospital to an MFT Site**

If a patient arrives with blood/blood components to a receiving MFT hospital, ensure two transfusion samples are taken at separate times (see 10.2 if the patient is known to the hospital).

10.2 If the patient is known to the receiving MFT hospital, only one transfusion sample is required if the Hospital Transfusion Laboratory has a historically confirmed blood group. Contact the Hospital Transfusion Laboratory by phone to provide notification (see contact details in section 1.1). The Hospital Transfusion Laboratory require the new sample prior to providing group compatible and crossmatched blood.

10.3 If the patient has special blood requirements e.g. irradiated blood, has known red cell antibodies, or as undergone solid organ or haematopoietic stem cell or bone marrow transplant these must also be communicated to the Hospital Transfusion Laboratory team. See section 5.3.3 for instruction on how to formally notify the laboratory of special requirements on HIVE.

10.4 If further blood is required as an emergency and it cannot wait for the Hospital Transfusion Laboratory to complete the investigations, access emergency group O blood and notify the laboratory immediately (see section 1.2 for locations).

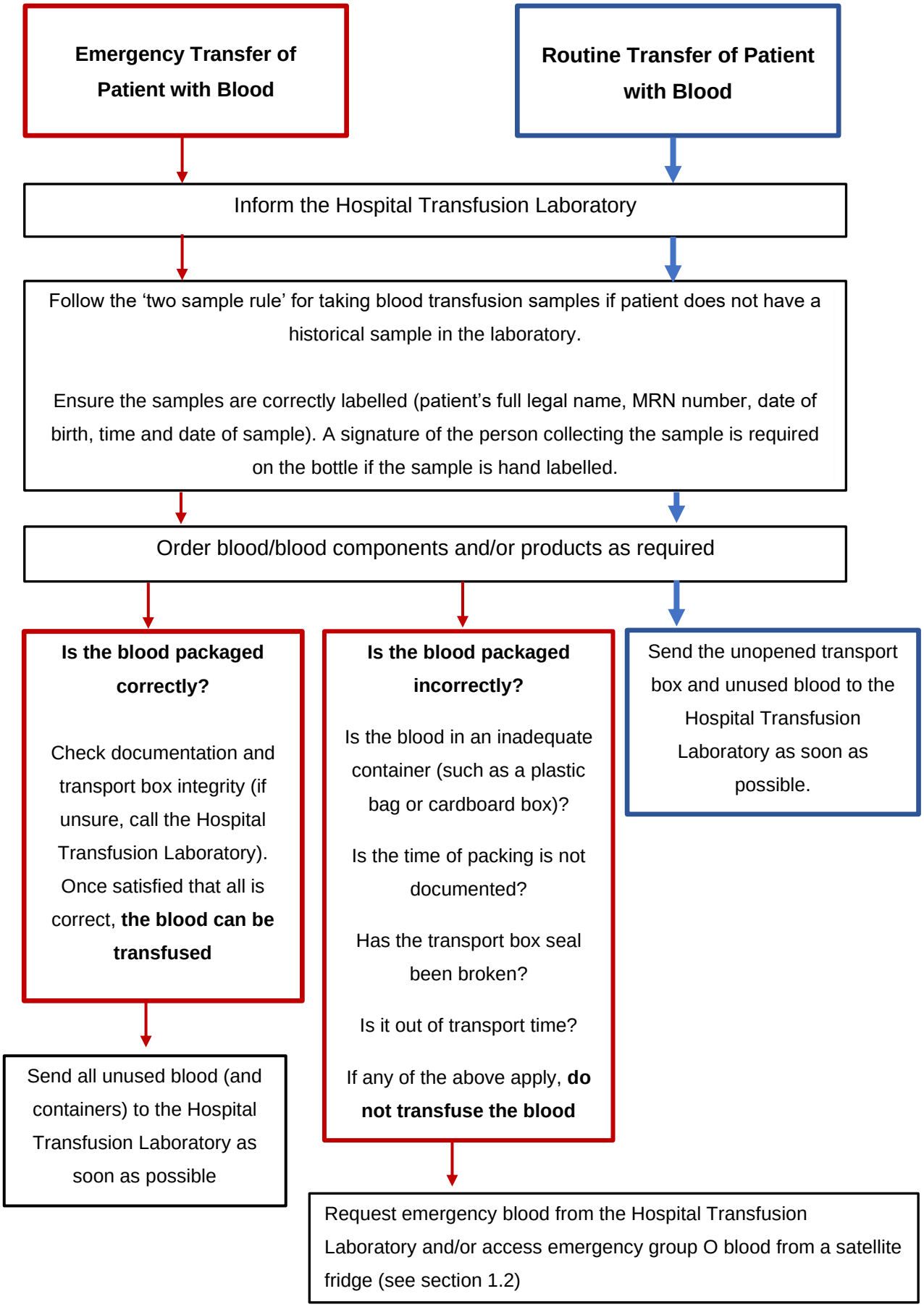
10.5 **Transferring Blood/Blood Component with an MFT Patient to a Non-MFT Hospital Site**

Contact the Hospital Transfusion Laboratory as soon as possible with:

- Patient details (full legal name, date of birth and MRN)
- Current location within MFT
- Transfer location
- Contact details
- Urgency

10.6 The Hospital Transfusion Laboratory will ensure that the blood is correctly labelled and packaged in a transport container. The laboratory will contact the requester when the blood is ready for collection.

**10.7 Flow Chart:** Transfer of Patient from Another Hospital with Blood



## 11 Equality Impact Assessment

11.1 The Trust is committed to promoting Equality, Diversity and Human Rights in all areas of its activities.

11.2 It is important to address, through consultation, the diverse needs of our community, patients, their carers and our staff. This will be achieved by working to the values and principles set out in the Trust's Equality, Diversity and Human Rights Strategic Framework.

11.3 To enable the Trust to meet its legislative duties and regulatory guidance, all new and revised approved documents, services and functions are to undertake an equalities impact assessment to ensure that everyone has equality of access, opportunity and outcomes regarding the activities. Contact the Service Equality Team (SET) on **0161 701 9231** for support to complete an initial assessment. Upon completion of the assessment, SET will assign a unique EqIA Registration Number**.**

11.4 The Trust undertakes Equality Impact Assessments to ensure that its activities do not discriminate on the grounds of:

| | | |
|---|---|---|
| Religion or belief | Age | Marriage or Civil Partnership |
| Disability | Race or ethnicity | Pregnancy and Maternity |
| Sex or gender | Sexual orientation | Gender re-assignment |
| Human Rights | Socio economic | |

Before any committee, group or forum validate a policy or approved document an EqIA Registration Number will be required.

| **Equality Impact Assessment**<br>Please record the decision whether the policy, service change or other key decision was assessed as relevant to the equality duty to:<br>Eliminate discrimination and eliminate harassment<br>Advance equality of opportunity<br>Advance good relations and attitudes between people | |
|---|---|
| Relevant | |
| *Guidance added for special requirements for patients whose gender identity is not the same as the sex assigned at birth – section 5.3.5*<br>*Guidance added for patients who have additional communication needs (including when English is not their first language) when discussing consent for blood transfusion - section 7.5.13*<br>*Guidance added for patients with communication difficulties whilst receiving a blood/blood component transfusion – section 8.5.4.*<br>*Note: There is a dedicated, associated MFT policy and care plans for patients who refuse blood components (such as Jehovah's Witnesses)* | |
| Please enter the EqIA registration Number: | 2022-168 |

## 12 Consultation, Approval and Ratification Process

### 12.1 Consultation and Communication with Stakeholders

The document was circulated for review to the groups listed below.

### 12.2 Policy Approval Process

The document was sent to the following groups for consultation within the available timeframe:

- Members of the MFT Hospital Transfusion Committee (HTC)
- Hospital Transfusion Team
- Medical Director

### 12.3 Ratification Process

The policy will be ratified by the Executive Hospital Transfusion Committee.

## 13 Dissemination and Implementation

### 13.1 Dissemination

- The policy will be placed on the Transfusion website and appear on the latest Trust news and Team brief.
- The information will be disseminated by the Heads of Nursing to their Divisions, Clinical Directors to their clinical teams. Information will be sent to the teams via Divisional Director for CSS in the form of an e mail to the Divisions.
- The Transfusion Practitioners will replace the existing intranet version.
- Information on how to access the MFT Blood Transfusion Policy will be disseminated at the blood transfusion education sessions/mandatory training.

## 14 Review, Monitoring Compliance with and the Effectiveness of Procedural Documents

14.1 The Executive Hospital Transfusion Committee is responsible for monitoring compliance with the MFT Transfusion Policy at Corporate Level.

14.2 This will be completed on a 2 yearly basis (via a real time clinical audit from current day and /or inpatients during the audit period) and reported to the Hospital Transfusion Committee.

14.3 The following will be monitored for compliance:

- Correct process for positive patient identification (PPID)
- Evidence of incorrect processes being followed (including use of override function within BPAM, failure to scan wristbands or wrong blood in tube)
- Process for blood/blood component administration including pre-transfusion bedside checks
- Completion of TACO checklist
- Documentation of consent
- Use of a single unit red cell transfusion strategy
- Training and competence

14.4 Any shortfalls identified will have an action plan put in place to address and have timescales included for re-audit /monitoring.

## 15 Standards and Key Performance Indicators 'KPIs'

15.1 This current policy available on the MFT Trust Intranet.

15.2 Training delivered at Mandatory Training, as per Trust Training Needs Analysis.

15.3 All staff carrying out the blood/blood component collection procedure will undertake an initial Hospital Transfusion Laboratory collection competency assessment and issued with a barcode and thereafter receive 2 yearly updates that can be undertaken by eLearning. Staff requiring training and assessment will be identified by departmental managers. Staff details on completion of the competency will be entered on to the Trust educational database.

15.4 All staff carrying out blood and blood component administration procedures will undertake blood/blood component administration competency and meet the criteria specified in the policy in line with 1st and 2nd checkers. The competency with be either using skill stations or an actual blood administration in their workplace.

15.5 Staff requiring training and assessment will be identified by their departmental managers. Staff details on completion of the competency will be entered on to the Trust educational database by the ward/unit team. Staff will require re-assessment every 3 years.

15.6 Undertake audit of compliance to transfusion specimen labelling by monitoring specimen rejection by the use of monthly dashboards.

15.7 To investigate and undertake trend analysis on all adverse incidents reported related to blood collection, blood sampling and blood administration.

15.8 To record and report both serious adverse incidents and events related to transfusion to the Serious Hazards of Transfusion (SHOT and MHRA).

15.9 To investigate and undertake trend analysis on all adverse incidents reported related to blood and blood components. Submit reports to the Executive Hospital Transfusion Committee, identifying trends and lessons learnt.

15.10 To monitor practice and identify areas of improvement or change through participation in local, regional and national audit.

## 16 References and Bibliography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- Nursing & Midwifery Council, The Code – Professional standards of practice and behaviour for nurses, midwives and nursing associates. London. 2015. https://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/nmc-code.pdf (last accessed on 02.08.2022)

- S Narayan (Ed) D Poles et al. on behalf of the Serious Hazards of Transfusion (SHOT) Steering Group. The 2020 Annual SHOT Report (2021).


*Other Documents*


- National Patient Safety Agency (NPSA) Safer Practice Notice: Right patient – right blood NPSA/2006/14, London: 2006.

- Royal College of Nursing. Right blood, right patient, right time. Guidance for Improving Transfusion Practice (2006).

- Royal College of Nursing. Standards for Infusion Therapy, 4th ed (2016).

- The Blood Safety and Quality Regulations (BSQR). Statutory Instrument No. 50. London. HMSO (2005).

- The Blood Safety and Quality Regulations (BSQR) (Amendment) (No.2). Statutory Instrument No. 2898. London. HMSO (2005).

## 17 Associated Trust Documents

All policies can be found on the MFT Intranet > Transfusion.

- Hospital Transfusion Laboratory: Sample Acceptance and Requesting Policy
- Major Haemorrhage Adult Guidelines
- Special Requirements for Blood Transfusion
- Transfusion Reaction Policy
- Guidelines for the Management of Major Haemorrhage in the Paediatric Patient
- Adult red cell guidelines
- Guidelines for the Clinical use of Platelets in Adults
- Guidelines for the use of Fresh Frozen Plasma – Adults
- Guidelines for the treatment of patients who refuse blood and blood components

*Related MFT Documents:*

- MFT 'Policy to Consent for Examination or Treatment'
- MFT 'Patient Identification Policy'
- MFT 'Temporary Identification Criteria for Unknown or Unidentified Patients'

## 18 Appendices

*Appendix A:*
Use of Blood and Blood Components in Paediatrics

*Appendix B:*
Use of Blood and Blood in Neonates

*Appendix C:*
Transfusion Training Needs Analysis

Appendix A. **Use of Blood and Blood Components in Paediatrics**

Original author: Dr A. Will, updated in July 2022 by Dr J. Peters

## 1. Dose Calculation for Red Cell Transfusion

**Volume to transfuse (mL)** = (target Hb [g/L] – actual Hb [g/L]) x weight [kg] x 0.4

**Hb** = Haemoglobin

In non-bleeding infants and children, the post-transfusion haemoglobin level should be no more than 20g/L above the transfusion threshold (BSH, 2016). This is usually achieved by transfusing a single unit (or equivalent weight-based volume) unless concern re: active blood loss or severe anaemia (Hb <60g/L). Discuss with the Paediatric Haematology SpR or Paediatric Haematology Consultant if advice required.

## 2. Red Cell Thresholds

Studies support the use of a restrictive threshold for red cell transfusions:

- Consider a haemoglobin threshold of 70g/L in stable, non-cyanotic patients
- Consider a peri-operative haemoglobin threshold of 70g/L in stable patients without major comorbidity or bleeding

Minimise blood loses by unnecessary blood sampling where possible.

For surgical patients (non-cardiac), ensure iron deficiency is treated with iron prior to surgery, where time allows and for all paediatric surgical patients, consider tranexamic acid and cell salvage use for those at risk of significant bleeding.

## 3. Acute Blood Loss

For Paediatric Major Haemorrhage call **2222** via MFT Switchboard stating, ‘paediatric major haemorrhage’ and the specific location and site.

Please refer to the MFT Policy *‘Guidelines for the Management of Major Haemorrhage in the Paediatric Patient’* on the MFT intranet.

## 4. Investigation of Chronic Anaemia

If no recent blood loss, assess for underlying cause of anaemia:

- Full blood count (FBC) including reticulocyte count
- Blood film
- Renal function

Further investigation where indicated:

- Haematinics
- Haemoglobin electrophoresis - *consent is required*
- LDH
- Direct Antiglobulin Test (DAT)

Consider:

- Family history of anaemia?
- Chronic bleed or infection?
- Primary bone marrow or renal disorder?

If severe anaemia is present:

- Patient is stable and asymptomatic – Do not transfuse blood and treat the underlying cause of anaemia
- If haemodynamically unstable *or* symptomatic – Transfuse blood and treat underlying cause of anaemia

## 5. Oncology/Stem Cell Transplant

For paediatric oncology (including haemato-oncology), post-chemotherapy and haemopoietic stem cell/bone marrow transplant patients, use a haemoglobin trigger of **<70g/L *or* <80g/L** for transfusion, depending on the patient's clinical status.

Consider a higher haemoglobin trigger (haemoglobin > 80g/L) if:

- The patient is undergoing radiotherapy
- The patient is symptomatic of anaemia
- Indicated by co-existing disease

## 6. Post-operative Anaemia

In the case of post-operative, life-threatening anaemia:

- Consider if further urgent surgery is required to stop blood loss
- Transfuse blood
    - Activate major haemorrhage pathway on **2222** if required
    - Access emergency group O D negative blood if required (for locations, see section 1.2)

- For all patients who have required an intra-operative a blood transfusion, consider oral iron replacement for 3 months

- If a post-operative haemoglobin level is <80g/L, consider a blood transfusion and oral iron replacement for 3 months

- If post-operative haemoglobin is 80-100g/L, replace for over blood loss and consider oral iron replacement for 3 months

For all patients in the categories above, organise a repeat outpatient full blood count to check haemoglobin levels.

## 7. Platelet Transfusion Triggers

For guidance re: platelet dosing for paediatrics, see section 7.4.

| Platelet Count (x $10^9$/L) | Clinical Situation |
|---|---|
| <10 | For all* patients, irrespective of signs of haemorrhage<br>**Excluding ITP#, TTP, HUS, HIT (see notes below)* |
| <20 | Severe mucositis<br>Infection, sepsis, or pyrexia<br>Splenomegaly<br>Laboratory evidence of DIC in the absence of bleeding<br>Anticoagulant therapy<br>Risk of bleeding secondary to local tumour infiltration<br>Insertion of non-tunnelled central venous line<br>Prior to discharge home* |
| <40 | Prior to lumbar puncture<br>**Note:** higher or lower platelet thresholds may be used, e.g. 20-50 x $10^9$/L, depending on the clinical situation and in line with departmental policies<br>Brain tumour |
| <50 | Moderate haemorrhage including bleeding associated with DIC<br>Tunnelled central venous line insertion<br>Before and within 24 hours of surgery (unless minor) or an invasive procedure<br>Note: **not applicable for surgery/procedures at critical sites** where a higher platelet threshold is required, see below |
| 50 – 100 | Major haemorrhage or significant post-operative bleeding (e.g. post-cardiac surgery), maintain platelets >75x$10^9$/L<br>Surgery at critical sites e.g. central nervous system *including* the eyes, maintain platelets >100x$10^9$/L<br>Extracorporeal circulation, maintain platelets >90x$10^9$/L |

**Notes:**

A platelet count should always be performed *within 24 hours* of a proposed transfusion

Always contact the surgeon/anaesthetist pre-operative to decide if minor or major surgery

# **Never** transfuse platelets to a patient with ITP or an inherited platelet disorder without prior agreement with a Consultant Haematologist

ITP: Immune thrombocytopenia purpura, TTP: Thrombotic thrombocytopenic purpura, HUS: Haemolytic uraemic syndrome, HIT: Heparin induced thrombocytopenia, DIC: Disseminated intravascular coagulation

## 8. Plasma and Cryoprecipitate Use

### Fresh Frozen Plasma (FFP)

- Prophylactic FFP should not be administered to non-bleeding children with minor prolongation of the prothrombin time (PT) /activated partial thromboplastin time (APTT) including prior to surgery.
- FFP may be beneficial in children with DIC who have a significant coagulopathy (PT/APTT >1·5 times midpoint of normal range or fibrinogen <1·0 g/l) associated with clinically significant bleeding or prior to invasive procedures or surgery in critical sites.

### Cryoprecipitate

1. Prophylactic cryoprecipitate should not be routinely administered to non-bleeding children with decreased fibrinogen including prior to surgery.
2. Cryoprecipitate may be given to children with clinically significant bleeding or prior to surgery at critical sites if the fibrinogen is <1·0g/l despite FFP.

Appendix B**. Use of Blood and Blood Components in Neonates**

Adapted from British Society of Haematology (BSH) Guidelines (2016 and 2020 addendum)

## 1. Neonatal Red Cell Transfusion

**Top up transfusions:**

Consider a restrictive transfusion threshold.

All red cells for neonates and infants (<1 year) will be provided as CMV negative by the Hospital Transfusion Laboratory. There is no need to formally notify the laboratory of this requirement.

*Suggested thresholds for preterm neonates (<32 weeks):*

| Postnatal age | Suggested transfusion threshold Hb (g/L) | | |
|---|---|---|---|
| | Ventilated | On oxygen/ NIPPV** | Off oxygen |
| 1st 24 hours | <120 | <120 | <100 |
| ≤week 1 (day 1-7) | <120 | <100 | <100 |
| week 2 (day 8-14)<br>≥week 3 (day 15 onwards) | <100<br><100 | <95<br><85 | <75*<br><75* |

NIPPV: Non-invasive positive pressure ventilation.

*It is acceptable that clinicians may use a haemoglobin threshold of up to 85g/L depending on the clinical situation.

BSH, 2016 and 2020 Addendum

Note: For later preterm (>32 weeks) and term babies, the values for babies off oxygen may be used.

- Where the term or preterm neonate does not require resuscitation, undertake delayed cord clamping.
- Minimise phlebotomy where possible, using small volume samples.
- Paedipacks are available for emergency use in the Trust. See section 1.2 for locations. Adult units must not be used.

Suggested neonatal red cell transfusion volume: 15mL/kg for non-bleeding neonates

Suggested neonatal red cell transfusion rate: 5mL/kg/hr

## 2. Neonatal Platelet Indications

- For preterm neonates with platelets <25 x$10^9$/L, transfuse platelets and treat the underlying cause of thrombocytopenia.
- For non-bleeding neonates, platelet transfusions *should not be routinely administered* if platelet count is ≥25 × $10^9$/L.

Suggested thresholds for preterm neonates:

| Platelet count (x$10^9$/L) | Indication for platelet transfusion |
|---|---|
| <25 | Neonates with no bleeding (including neonates with NAIT if no bleeding and no family history of ICH). |
| <50 | Neonates with bleeding, current coagulopathy, before surgery, or infants with NAIT if previously affected sibling with ICH. |
| <100 | Neonates with major bleeding or requiring major surgery (e.g. neurosurgery). |

BSH, 2016 and 2020 Addendum

NAIT – Neonatal immune thrombocytopenia

ICH – Intracranial haemorrhage

Clinicians may choose to apply the thresholds above to term babies also.

Suggested neonatal platelet transfusion volume: 10-20mL/kg

Suggested neonatal platelet transfusion rate: 10-20mL/kg/hr

For guidance re: platelet dosing for patients under 1 year, see section 7.4.

## 3. Neonatal Plasma and Cryoprecipitate

*It is no longer a national requirement for those born on or after 1st January 1996 to receive SD-FFP (Octaplas) or MB cryoprecipitate. MB cryoprecipitate is no longer manufactured and has been replaced by a UK sourced cryoprecipitate with neonatal and infant specifications.*

*Key Principles:*

- Fresh frozen plasma (FFP) should not be used routinely to try to correct abnormalities of the coagulation screen alone in non-bleeding neonates.
- FFP may be of benefit in neonates with clinically significant bleeding or prior to invasive procedures with risk of significant bleeding, and who have abnormal coagulation (PT/APTT significantly above the gestational and postnatal age-related range).
- FFP should not be used for simple volume replacement.
- FFP should not be routinely used for the prevention of intraventricular haemorrhage.
- Cryoprecipitate should not be routinely used for nonbleeding neonates with decreased fibrinogen.
- Cryoprecipitate may be considered when a fibrinogen level is <1g/L for surgery at risk of significant bleeding or at critical sites.

Suggested neonatal FFP transfusion volume: 15-20mL/kg

Suggested cryoprecipitate transfusion volume: 5 – 10mL/kg

Suggested transfusion rate: 10-20mL/kg/hr

# Appendix C. **Transfusion Training Needs Analysis**

| | |
|---|---|
| **Training subject** | Blood Transfusion – Trust Wide |
| **Division:** | Clinical Scientific Services |
| **Directorate:** | Laboratory Medicine |
| **Department:** | Transfusion |
| **Lead:** | C. Parker |
| **Record of training:** | MFT educational database (OLM) and locally within clinical areas on BloodTrack and Enquiry |
| **Name of person who records training:** | Divisional teams – Ward/Unit identified leads/EDP's |
| **Date of completion:** | July 2022 |

| Training Course Title | Length of course | Lead Responsibility | Frequency of Training | Details of any Mandatory/ legislative/ statutory requirements | Where are the Details of the training Requirements For staff currently Held e.g. Strategy or Policy documents | Staff groups/ Categorise Needing to attend | Mode of Delivery of Training e.g. Classroom based or e-learning |
|---|---|---|---|---|---|---|---|
| Blood Administration Competency training | Variable (10 – 15 minutes) | Divisional Manager CSS And Transfusion Team Ward/Unit Managers/ Divisions | **3 yearly**<br><br>**Supported with Yearly Clinical Mandatory training** | NPSA Safer Practice Notice, 14 (2006)<br><br>NHSLA Standard 4 Criterion 7<br><br>Better Blood Transfusion 3, Health Service Circular | MFT Blood Transfusion Policy (Policy Hub on Intranet) | Any staff who Undertake blood administration Qualified Nurses Anaesthetists Operating Department Practitioners | Takes place within departments as a competency assessment. |
| Blood Sampling competency assessment for Transfusion | Variable (15-20 minutes) | Ward/Unit Managers/ Divisions | **Yearly** | NPSA Safer Practice Notice, 14<br><br>NHSLA Standard 4 Criterion 7<br><br>Better Blood Transfusion 3, Health Service Circular | MFT Blood Transfusion Policy (Policy Hub on Intranet) | Nursing Staff Doctors Health Care Support Workers Phlebotomists | Takes place locally within departments on a one-one competency assessment. Incorporated into ANTT yearly assessments, local records to be kept. |

| Training Course Title | Length of course | Lead Responsibility | Frequency of Training | Details of any Mandatory/ legislative/ statutory requirements | Where are the Details of the training Requirements For staff currently Held e.g. Strategy or Policy documents | Staff groups/ Categorise Needing to attend | Mode of Delivery of Training e.g. Classroom based or e-learning |
|---|---|---|---|---|---|---|---|
| Hospital Transfusion Laboratory<br><br>Collection competency training | Various | Divisional Manager CSS And Transfusion team | **Initial competency assessment then 2 yearly updates via e-Learning** | NPSA Safer Practice Notice, 14<br><br>NHSLA Standard 4 Criterion 7<br><br>Better Blood Transfusion 3 Health Service circular<br><br>British Committee for Standards of Haematology, Blood administration, 2009<br><br>BSQR (SI 2005 No.50) | MFT Blood Transfusion Policy (Policy Hub on Intranet) | Registered Paediatric nurses<br>Theatre Practitioners<br>General Porters<br>Cardiac Catheter Laboratory Porters<br>Theatre Porters<br>Staff identified by the Clinical teams who as part of their role require access blood fridges<br><br>Specific Assistant Practitioners/CWS and Health Care Assistants identified by Ward/Unit Managers | Takes place within the Hospital Transfusion Laboratory at the blood issue fridge or blood satellite fridge – observed competency assessment demonstrating the process required to remove and deliver blood/blood components<br><br>E-Learning for blood collection is available for subsequent 2 yearly refresher updates. |