Ashford and St. Peter's Hospitals
NHS Foundation Trust

Blood Transfusion Policy for Adult Patients with Related Guidelines

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Executive Lead: Mark Roland, Chief Medical Officer

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Ratified by: Patient Blood Management Committee

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History

Issue	Date Issued	Brief Summary of Change	Author
1	February 2014	Whole Document review Merging of two previous guidelines (Blood Transfusion and Anti-D Prophylaxis).	Nicola McVeagh Dr John de Vos
2	May 2017	Red cell, Platelet, FFP & Cryoprecipitate guidance now based on NICE Transfusion guidelines (NG24) and new NBTC indications. Specific Requirements – new table for all requirements and conditions. Fetal RhD testing included. Massive haemorrhage flow chart revision. Refusal of transfusion processes completely revised. New Tranexamic acid guidance. Emergency Blood Management Plan removed and made into a Laboratory SOP.	Nicola McVeagh Dr John de Vos
3	February 2019	Many minor changes to incorporate changes to LIMS and documentation, addition of SHOT TACO checklist, and SHOT compatibility chart, clarification of transfusion at night to prevent unnecessary delays, clarification of specific requirements post incident. Changes to Appendix L – Reversal of Oral Anticoagulant to include DOAC's Change to Acute Transfusion Reaction plan	Nicola McVeagh Dr John de Vos Kim East
4	April 2021	Minor updates to specific requirements following changes to BSH guidelines. Minor changes due to change in	Kim East, Matthew Rogers

Issue	Date Issued	Brief Summary of Change	Author
		LIMS at HWPH. Addition of granulocytes. Appendices on refusal of transfusion and reversal of anticoagulants moved to a separate guideline. Appendix on transfusion in haemopoietic stem cell transplant re-written and check list added in accordance with national recommendations	
5	April 2023	Minor updates. Surrey Safe Care added as EPR system in use. Remote release blood fridge information added and emergency blood location around the trust updated. Blood transfusion policy`s previous appendixes split out as guidelines but to be linked to this policy. Reviewed September 2025. No changes made.	Kim East, Matthew Rogers

For more information on the status of this document, please contact:	Kim East, Lead Transfusion Practitioner
Policy Author	Kim East and Matthew Rogers
Department/Directorate	Berkshire & Surrey Pathology Services (BSPS)
Date of issue	April 2023
Review due	September 2028
Ratified by	ASPH Patient Blood Management Committee BSPS Joint Patient Blood Management Team
Audience	All staff involved with blood transfusion and any associated blood products including anti-D and Beriplex.

Executive summary

Positive Patient Identification
All patients should be asked their full name (including spelling) and DOB. These details (and NHS number) must exactly match patient's ID band & other documentation required at that stage.

Transfusion Sample Requests on EPR
There are 2 different requests. Blood group and antibody screen (G&S) and Crossmatch. This is called Adult -Blood Administration (the prepare order).

Send only 1 Transfusion Sample at a time
Only repeat G&S if requested to by lab or sample is no longer valid

Label Transfusion Samples before leaving the patient (minimum data accepted on sample)

- Surname, First name, Date of birth, NHS number
- Date and time of sample, Signature or initials of the person who took the sample

Patient Information & Consent
Give verbal and written information where possible to patients who may have / had a transfusion and document consent in the patient's clinical notes.

Prescribing Blood Components
Blood components are prescribed electronically on EPR Each component must be prescribed individually,
A prescription on EPR **does not** inform the lab- A separate request is required either via EPR and/or verbally

Indications for red cells
Use restrictive thresholds (<70g/L) for patients who do not have major haemorrhage, acute coronary syndrome or who are transfusion dependent

Single Red Cell Unit
One unit should be transfused and then patient reassessment based on symptoms /Hb

Time to Issue Red Cell Units

Type of Issue	Suitability of patient	Time
Electronic Issue	A historic sample with no blood group antibodies A tested, valid sample in the lab	15 minutes
Group Specific	A historic sample with no blood group antibodies An untested, valid sample in the lab	15 minutes
Crossmatch: No patient history	No historic sample An untested sample in the lab	At least 60 minutes
Crossmatch: antibodies	A historic sample showing blood group antibodies A tested or untested sample in the lab	60 minutes to 48 hours

Requests for platelets
Platelets are NOT kept as a stock item so need to be ordered in advance to avoid delays.
Irradiated Components (RBC and Platelets)
Required for Hodgkin Lymphoma, pre or post stem cell transplant or after purine analogue chemotherapy

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Quick reference guides for EPR processes can be found as follows:
Ashford and St Peters- via the Trustnet under Surrey Safe Care, QRS (quick reference guides)

See also:

- Refusal of Blood Transfusion Guideline
- Anti-D Prophylaxis, foetal Rh D testing & management of maternal antibodies Guideline
- Massive Haemorrhage Management Guideline
- Safe Transfusion Requirements for Patients Undergoing Autologous and Allogenic Haemopoietic Stem Cell Transplantation (HSCT) Guideline
- Transfusion Management in Surgery Including Maximum Blood Ordering Schedule and pre-operative testing Guideline

1. Introduction

1.1 This policy fully supports the recommendations for clinical practice & training in transfusion medicine published by the National Institute of Health & Care Excellence (NICE), British Society for Haematology (BSH), the National Blood Transfusion Committee (NBTC), the Serious Hazards of Transfusion (SHOT) scheme & other national / local guidelines as referenced. This policy encompasses all blood components / products & has appendices covering guidance on specific issues as listed in the contents page.

1.2 Ashford & St Peters NHS Foundation Trust is committed to the provision of a service that is fair, accessible & meets the needs of all individuals.

2. Scope

2.1 All staff involved in sampling, prescribing, ordering, collecting, administration of blood components / products & care/monitoring of a patient receiving a transfusion must read the sections relevant to their place of work & role.

2.2 This policy applies to adult patients at Ashford and St Peters Hospitals NHS Foundation Trust & the satellite hospitals that use blood components/products supplied by the Transfusion Laboratories.

Information relating to:

- Refusal of blood components
- Reversal of oral anticoagulants
- Blood group antibodies in pregnancy and Prophylactic anti-D
- Massive Haemorrhage
- Pre-operative transfusion management and pharmacological reduction of blood loss (Tranexamic acid)

can now be found in the relevant clinical guidelines.

2.3 **NEONATES & PAEDIATRICS:** Please see Blood Transfusion Policy for Neonatal & Paediatric Patients

2.4 Information pertaining to **Massive Haemorrhage, Use of prophylactic anti-D, refusal of blood transfusion and pre-operative transfusion management** can be found under the relevant clinical guidelines

3. Purpose

3.1 The purpose of the policy is to assist all staff involved in any aspect of blood transfusion to ensure the right blood components / products are given to the right patient at the right time. It also aims to ensure a standardised approach to the management of patients receiving blood components / products,

reflecting best practice, thereby reducing the risks associated with transfusions.

4. Explanation of Terms Used

4.1 **Blood Components** includes red blood cells, platelets, fresh frozen plasma (FFP) and Cryoprecipitate, and Granulocytes i.e., items which are blood group specific.

4.2 **Octaplas** is a solvent/detergent treated pooled plasma is a blood product used as an alternative of FFP

4.3 **Unique Patient Number** the NHS number is the preferred unique identifier due to increasing shared service within Pathology. Patients may also have hospital numbers & other numbers instead such as a Major Incident, Accident & Emergency (ED) or a Military number. Therefore, throughout this document the term unique patient number has been used to cover these possibilities.

4.4 **Electronic Patient Record (EPR)** is a digital version of the patient's healthcare records (notes)

4.5 **Blood Refrigerator/Fridge** refers to a refrigerator specifically designated for the storage of blood components / products for transfusion, fitted with a temperature recording device and an alarm system.

4.6 Remote Release Blood Fridge refers to a Blood fridge which allows release of compatible red cells at the point of care

4.7 **Compatibility Tag** refers to the label attached to the blood product/component, affixed by Transfusion Laboratory, & used as part of the checking process.

4.8 **Blood Bag Label** is the label pasted to the blood component by the NHS Blood and Transplant Service (NHSBT), which states the component type, donor unit number, blood group & expiry date.

4.9 **Request** is either an electronic request or verbal request for a test or component. which should allow for positive patient identification and include all relevant details of the request. With the introduction of EPR systems the printed request is the printed barcode. Re-printing of historic requests is NOT permitted

4.10 **Transport box** is an accredited transport box to keep blood components at the correct temperature for a set time frame while sealed. For red cells this is usually 3 or 4 hours but the time will be marked on the accompanying paperwork.

5. Duties and responsibilities

Healthcare organisations have an obligation to provide a safe and effective transfusion service to their patients and appropriate training to their staff. A suitable infrastructure is required to establish and continue support for these activities.

5.1 Senior/ General / Clinical Managers: have responsibility for ensuring:

- Staff for whom they are responsible for are aware of the updated Policy and the implications
- Implementation of the Policy
- Local systems for auditing and/or reviewing compliance with Trust Policies are in place

5.2 Heads of Department / Service, Heads of Nursing / Midwifery / Professions,

- Implementation of the Policy and ensuring working practices accommodate and adhere to relevant Trust requirements
- Ensuring that staff for whom they are responsible have attended any relevant training or awareness sessions relating to the Policy;

5.3 The Trust Patient Blood Management Committee (PBMC) and The Joint BSPS Patient Blood Management Team (PBMT) must ensure the development, monitoring and auditing, of safe and effective transfusion policies and guidelines across all sites. The Joint BSPS PBMT meets regularly to discuss all aspects of transfusion; the outcome of this is fed into the quarterly site specific PBMC meetings at each site. This enables monitoring of all aspects of transfusion as reported in section 8 of this policy.

5.4 The Transfusion Practitioner Team is responsible for:

- Ensuring development and provision of competency-based transfusion training courses for clinical staff in order to meet the training needs analysis, and sustaining training targets in accordance with recommendations from Better Blood Transfusion Health Service Circular 2007/001, and the National Blood Transfusion Committee requirements (2015).
- Maintaining an accurate database of staff attendance at transfusion training courses and achievement of competency
- Monitoring implementation of the policy through data collection and audit activities
- Providing an expert resource to support practitioners and representing the Trust at relevant regional and national meetings
- Investigation of incidents and instigation of corrective and preventative actions
- Policy and guideline review in line with national directives/changes in practice.
- Production of traceability statistics and reports

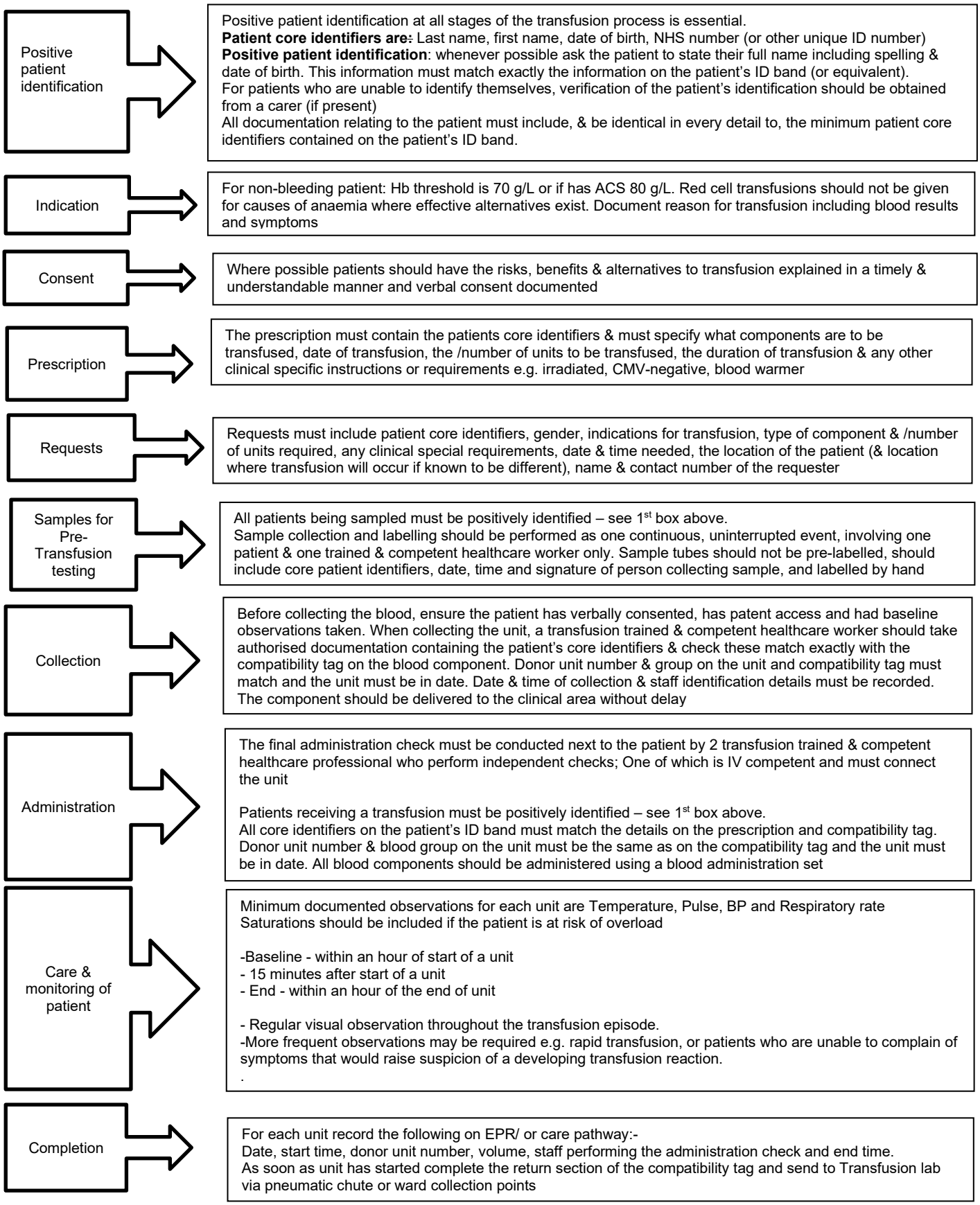
5.5 Trust Staff

Staff must read and adhere to the policy and any other transfusion guidelines that pertain to their role and area of work. Staff must also meet the training and competency requirements outlined in section 7.

5.6 **Assessors** of blood competency must themselves have been competency assessed by a member of the TP team to competency level 5 (Benner 1984); this must be repeated 3 yearly. Registered nursing/midwifery staff also require an approved mentor qualification, e.g., mentorship, mentor preparation, ENB 998/997 or Certificate in Education.

6. Policy

6.1 Transfusion Process Summary

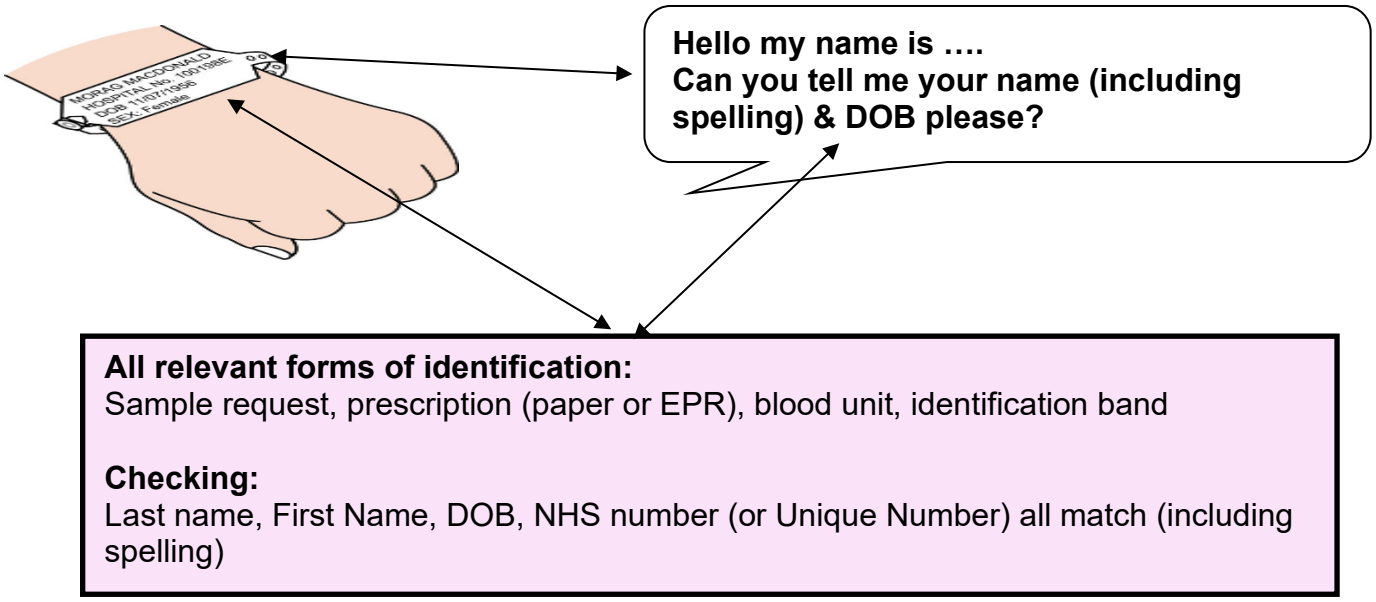


6.2. POSITIVE PATIENT IDENTIFICATION

Positive patient identification is essential at all stages of the blood transfusion process:

- Blood sampling
- Collection of components from storage & delivery to the clinical area
- Administration to the patient

Figure 1: Positive patient identification



5.2.1 **Positive patient identification process:**

Patient core identifiers are: Last name, first name, date of birth, NHS number (or unique ID number)

All patients should, whenever possible, be asked to state their full name (first name and last name including spelling) and date of birth. This must match exactly the information on the patient's identification band (or equivalent) & any other associated documentation. This is the positive patient identification check.

In circumstances where the patient cannot state their details and no carer is available, the patient's identification band will be the only means of positive patient identification and details on the ID band should be accepted as correct

All documentation relating to the patient must include, and be identical in every detail to, the minimum patient core identifiers contained on the patient's ID band.

5.2.2 **Temporary Identification for Unknown/Unidentified Patients:**

Emergency departments often care for patients unable or unwilling to give their identity including patients who are unconscious or who have a critical illness, people with mental health conditions or delirium and people affected by drink or drugs. Giving a unique identity to these patients ensures safe and prompt diagnosis and treatment, however these systems have a high potential of error if they use similar names e.g. unknown female/male, sequential pre-allocated numbers and identical dates of birth, e.g., 01.01.1900.

To reduce this risk an NHS improvement patient safety alert was issued in 2018 recommending the following criteria for temporary identification:

https://www.england.nhs.uk/wp-content/uploads/2019/12/Patient_Safety_Alert_-_unknown_or_unidentified_patients_FINAL.pdf

Names: A distinctive method is to randomly generate combinations of first and last name from an edited phonetic alphabet, e.g., Foxtrot WHISKY. This can be pre-fixed with hospital NHS code (initials) to help identify the location for hospital networks.

Temporary Numbers: A distinctive method is to prefix randomly generated number with the relevant standard NHS trust code is recommended where possible.

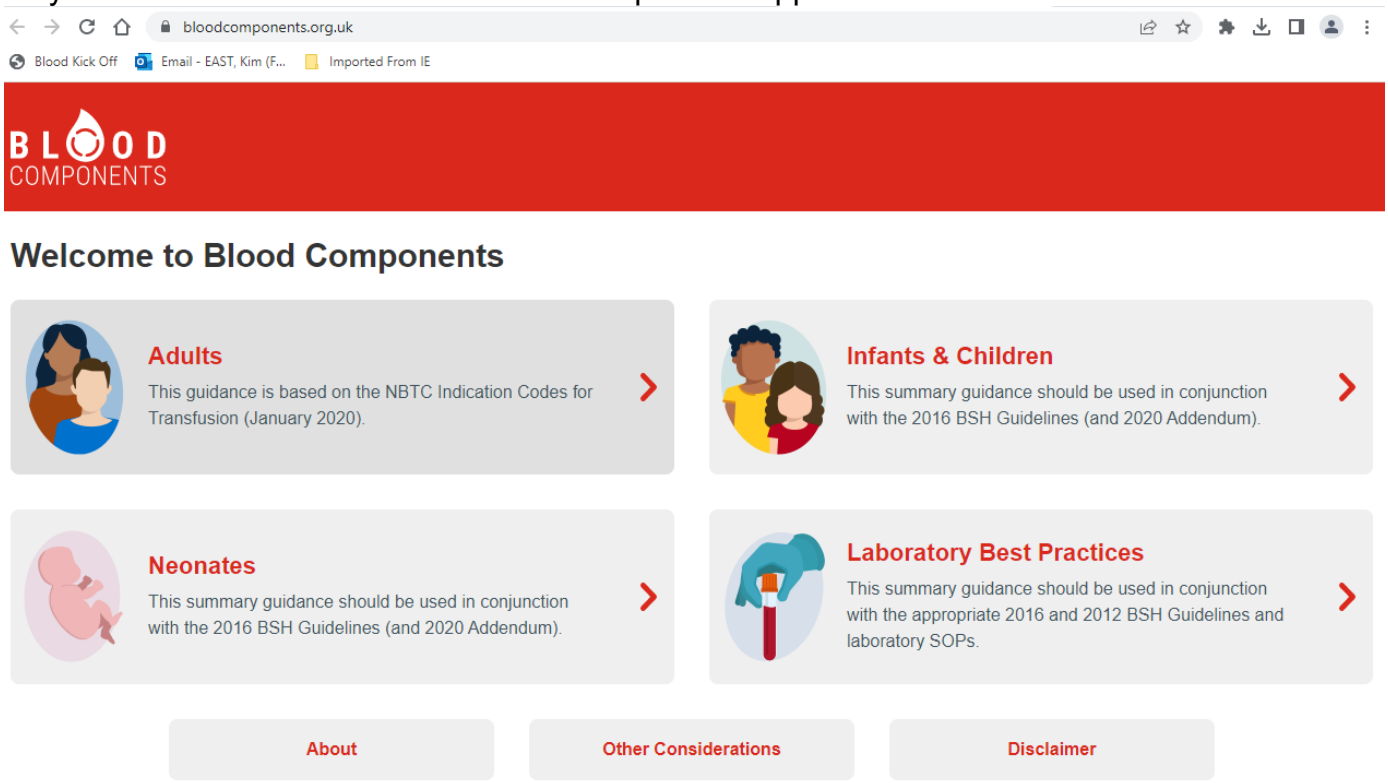
Date of Birth (DOB): the convention of using 1900 for an adult and 2000 for children has become impractical as pathology systems can reject DOB 1900 and 2000 no longer indicates a child. Using the same DOB may also lead to misinterpretation of pathology results because normal ranges are age related. The recommended option is to combine 1st Jan with an estimated year of birth.

6.3 INDICATIONS

The decision to transfuse must be based on a thorough clinical assessment of the patient. Clinicians prescribing blood components should be aware of the appropriate indications as per NICE recommendations and National Blood Transfusion Committee (NBTC) indication codes

See Appendix 3 for indications for all blood components

Or you can download the NHSBT blood components app



There must be a clear entry in the clinical notes detailing:

- the indication for the use of blood components
- number and type of components to be transfused

- date to be transfused.

6.3.1 **Non-bleeding (anaemic) patient**

The cause of anaemia should be established, & treatment with red cell transfusions should not be given where effective alternatives exist, e.g. treatment of iron deficiency, megaloblastic & autoimmune haemolytic anaemia unless the anaemia is life-threatening.
Iron Deficiency anaemia should be managed as per local guidelines.

Symptoms of anaemia for which red cells may be required include: - syncope/postural hypotension, angina, new ischemia on ECG, breathlessness and/or tachycardia for no other reasons.

6.3.2 **Dose of Components**

- Single-unit red cell/platelets where there is no active bleeding.
- A red cell dose of 4 ml/kg will produce an approximate raise of 10 g/L in Hb concentration.
- A platelet unit will raise platelet count by 20-40x10^9
- After each single-unit red cell/platelet transfusion clinically reassess and check post transfusion levels. Give further transfusions if needed.
- Doses of FFP should be calculated at 10-15mL/Kg
- Dose of cryoprecipitate is 2 pools. This will increase fibrinogen by approximately 1 g/Litre
- The risk of transfusion-associated circulatory overload (TACO) is reduced by careful pre-transfusion clinical assessment & use of single-unit transfusions, or prescription in millilitres, for elderly or small, frail adults where appropriate (See appendix B) If prescribing in mls instructions should be clear and /or prescribe under paediatric EPR requests Patients at risk include patients with low body weight, patients more than 70 years old and those with concomitant medical conditions (including cardiac failure, renal impairment, hypoalbuminemia and fluid overload).

Careful haemodynamic monitoring for at risk patients is essential.

6.3.3 **Cell salvage**

Consider intra-operative cell salvage for patients who are expected to lose a very high volume of blood (for example major obstetric procedures & complex orthopaedic surgery) or in patients with blood group antibodies
Do not use cell salvage without Tranexamic acid.

6.3.4 **Tranexamic acid**

Offer Tranexamic acid to adults undergoing surgery who are expected to have at least moderate blood loss (greater than 500 ml).

6.4 PATIENT INFORMATION AND CONSENT

The Advisory Committee on the Safety of Blood, Tissues and Organs (SaBTO) have issued guidance for Clinical staff on Consent for Blood Transfusion. It states that valid consent should be obtained prior to any planned transfusion and documented in the patient's clinical record. If the patient changes their mind at any point before the transfusion, they are entitled to withdraw consent

NICE Quality Standards (QS138) require a trained practitioner to provide verbal and written information to patients who may have / have had a transfusion, explaining:

- the reason for the transfusion and possible consequences of refusal
- the risks and benefits including transfusion-associated cardiac overload (TACO)
- the transfusion processes
- 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
- that they are encouraged to ask questions

The information should be explained to patients in a timely & understandable manner to allow them to make an informed choice on whether to accept the transfusion or not.

As part of the consent process document information discussions and verbal consent in the clinical notes.

NHS Blood and Transplant leaflets should be available in all clinical areas and given to the patient and / or relatives prior to a transfusion. They explain the risks and benefits of a transfusion.
They are available from the Transfusion Practitioner or from the link below
https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/23998/inf1580-1-receiving-a-blood-transfusion-print-friendly.pdf

Translation of the leaflet in 25 different languages is available from the link below.

https://www.transfusionguidelines.org/transfusion-practice/consent-for-blood-transfusion/consent-information-for-patients/receiving-a-blood-transfusion-patient-information-leaflet-translations
Pre operative assessment or antenatal appointments are ideal times to offer information leaflets.

If a patient refuses a transfusion please refer to clinical guidelines on refusal of blood components and contact the Haematologist/TP team if necessary.
If a patient receives a transfusion whilst unconscious or whilst unable to give consent for any reason, they should be informed of this as soon as possible and given the patient information listed above.

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 and any adverse events
- that they are no longer eligible to donate blood

6.5 PRESCRIPTION

Blood components must be prescribed by a registered medical doctor or a registered practitioner who has met the requirements of the 'Policy Non-Medical Decision Making and Authorisation of Blood Component Transfusion
The prescription must specify:

- the date components are to be given
- the patient's core identification details
- the blood component(s) to be administered
- Specific transfusion requirements needed e.g. irradiated CMV negative or blood warmer required
- the quantity to be given (usually stated as number of units or volume in mls)
- the duration of component for adults as follows
    - **Red cells:** usually 3 hours (2 hours if no underlying heart or renal problems); however, can be transfused rapidly if clinically indicated. (See separate Rapid Transfusion Guidelines)
    - **Platelets:** 30 minutes for one adult dose
    - **Plasma (Fresh Frozen Plasma or Octaplas):** 30 minutes for each unit
    - **Cryoprecipitate** 30 minutes per unit
    - **Granulocytes** 60 minutes per unit
- Medication required before transfusion must be prescribed separately **(drugs must never be added to the component bag)**

There must be a clear entry in the clinical notes detailing:

- the indication for the use of blood components
- number and type of components to be transfused
- date to be transfused.

Blood components are prescribed on EPR via

- Power plan (Cerner)

In the case of EPR not being available, the paper Transfusion Care Pathway should be used and scanned into the EPR system once available.

6.6 REQUESTING BLOOD COMPONENTS

6.6.1 Before the transfusion laboratory can issue any blood components for a patient, they will need to know the blood group of the patient and for red cells will need a valid transfusion sample so a transfusion sample may need to be sent to the laboratory. See section on Sample Requirements 6.7.1

6.6.2 **Domiciliary transfusion**

Any patients who have never had a transfusion must have 2 separate grouping results & serum IgA measured prior to having their first transfusion at home. Samples will be taken by the requesting team, labelled as per policy, & sent into the supplying Transfusion Laboratory for testing. Only if the IgA results are satisfactory will a home transfusion be approved.

6.6.3 **Who can request?**

Requests for blood components required may be made by transfusion trained & competent healthcare worker.

6.6.4 **Request details required for blood components**

When completing the electronic or paper request ensure the following fields are populated:

- Clinical details/indications for transfusion
- Blood components required
- Any specific requirements
- Date and time blood components required
- Antenatal samples must have expected date of delivery (EDD) or gestation and if requesting anti-D include the date/time required and location where administration will take place
- Once the request is completed in EPR the request label placed in the bag alongside the sample. The sample request label can NOT be re-used for subsequent requests as each label contains a unique acquisition number for laboratory use

6.6.5 **Requests for Red Cells:**

The Trust aims to transfuse 80% of all red cell units requested, except in maternity where the target is 60%. Therefore, red cells should only be requested if the units are to be transfused, if there is active bleeding or a very high risk that there will be at least 1000mls blood loss. For samples required prior to elective surgery refer to separate Clinical guidelines on pre-transfusion samples

Red cell units issued for a specific patient will be available until the morning after the date of request. If the date of the transfusion changes after the units have been requested, then the Transfusion Laboratory must be contacted. They will then inform the clinical staff if the units are still valid for the new date of transfusion.

6.6.5.1 **Time to issues Red cells.**

The method of red cell issue has an impact on the time it takes and the amount of notice that is required by the Transfusion Laboratory. Table 2 below shows the different methods of issue, which patients this method is suitable for and how long it takes to issue red cell units. Laboratory comments are added to the G&S result if patients are NOT suitable for electronic issue

Type of Issue	Patients suitable	Time to Issue
Electronic Issue	• A historic transfusion sample on file • No blood group antibodies • A tested, valid transfusion sample in the transfusion laboratory	15 minutes
Group Specific	• A historic transfusion sample on file • No blood group antibodies • An untested transfusion sample in the transfusion laboratory	15 minutes
Crossmatch no history	• No historical sample on file • Two untested samples in laboratory	60 minutes if no antibodies identified
Crossmatch on site-Known antibodies	• A historic sample on file and blood group antibodies • A transfusion sample in the transfusion laboratory	1 to 3 hours
Routine crossmatch at NHSBT with known antibodies	• A historic sample on file and complex blood group antibody investigations or on anti-CD38 monoclonal antibody (Daratumumab and Isatuximab) • NHSBT will need 12 mls of blood for crossmatching	1-2 days
Urgent Crossmatch at NHSBT with known antibodies	If blood is required urgently please contact the duty consultant haematology for advice NHSBT will need 12 mls of blood for crossmatching • One transfusion sample to be kept on site	24 hours
Crossmatch at NHSBT with unidentified antibodies	NHSBT will need 12 mls of blood for investigations and crossmatch • One transfusion sample to be kept on site	Up to 7 days

6.6.5.2 **Urgent red cells transfusion in patients with red cell antibodies**

If a patient has an urgent transfusion requirement and has red cell antibodies it is essential to discuss this with a Transfusion Laboratory senior and, if necessary, a Consultant Haematologist. Samples may have to be sent to NHSBT for cross matching; this can take up to 24 hours. Emergency O red cells, RhD negative or positive, may not be suitable. A decision may need to be made to transfuse the least incompatible red cell units and to monitor the patient for adverse effects.

6.6.6 Request for Platelets

The request for platelets should be made on a request form or as a verbal request to the Transfusion Laboratory.

As platelets are NOT kept as a stock item each platelet request needs to be ordered in for a specific patient for a specific date. To prevent delays, the request should be given to the Transfusion Laboratory with adequate notice so the platelets can be ordered in time for the planned transfusion.

6.6.7 Requests for Plasma and Cryoprecipitate

The request for both plasma and cryoprecipitate should be made on a request form or as a verbal request to the Transfusion Laboratory.

Both of these components are stored frozen and take 35 minutes to thaw prior to issue, and another 5 minutes to label. Therefore, for prophylactic use the Transfusion Laboratory must be informed in advance to enable the component to be available at the time of the invasive procedure or surgery.

6.6.7 Requests for Granulocytes

The decision to administer granulocytes must be made following discussion between the consultant Haematologist and haematology consultant at NHSBT

6.6.8 Telephone requests

An electronic/written record will be kept by the laboratory of all telephoned requests for blood components.
The identity of the person making the request
The person receiving the request must be recorded.

All urgent requests for any component/product or Group and Screen, must be verbally communicated to the Transfusion Laboratory

6.7 BLOOD SAMPLES FOR PRE-TRANSFUSION TESTING

- Blood taken from one patient and labelled with another patient's details (wrong blood in tube or WBIT) may result in the laboratory issuing an ABO incompatible blood component. This may have a fatal outcome. For this reason, blood components can only be issued if there are 2 results for the patient confirming their blood group.
  The following rules are designed to prevent such errors:
  - The 2 blood group results must have been from samples taken at different times; one can be a historical result and one must be from a current sample.

- Staff **must not** fill 2 transfusion tubes from the same venepuncture / line access as this defeats the object of the 2 blood group result rule (2 samples from the wrong patient will give 2 wrong but identical results).
- Staff should send one sample for a patient and check EPR systems to see if further samples are required
- In emergency situations this will not delay issue of components; emergency group O red cells will be issued and group AB or A plasma.

6.7.1 Sample Requirements

For the majority of patients, a Group and Screen request is usually all that is required as red cell units are not required.
If Red cells are required, first check if there is a valid G&S sample already in the laboratory (5.7.2). If there is a valid sample then verbally request the units by contacting the Transfusion Laboratory.

If there is no valid sample and a transfusion sample is required place a "Order red cells" request on EPR which will include a G&S. This Order red cell request allows date, time and number of red cells to be added to the request.
Only telephone the laboratory if the request is urgent. The EPR sticker for Order red cells has XM on it which means the Transfusion laboratory can easily recognise that it is a request for red cells.

If the location of transfusion is not the same as the requesting location, a comment regarding the location should be written in Reason for pathology test section and the correct location handwritten on the EPR sticker.

6.7.2 Sample Validity

The British Society for Haematology provide the following rules for sample validity:
Table 3: sample validity

Patient transfused/pregnant	Sample to be taken not more than
Less than 3 months	72 hours before transfusion*
Never or more than 3 months	7 days before transfusion

- *Samples taken on a Friday will not be valid for a transfusion on Monday*

It is recognized that for some individuals, e.g., haematology patients, who have been repeatedly transfused for several years and who have not had an antibody response, a more tolerant approach may be taken. This can only be undertaken by the Consultant Haematologist caring for the patient, who must notify Transfusion Laboratory

6.7.3 Who can take samples?

Staff who are assessed as competent in blood transfusion sampling as per local competency.

6.7.4 Process for Collection of Blood Samples for Pre-transfusion testing

The process for collection of blood sample is the same regardless of how the blood sample is obtained, venepuncture, cannula or from a line.

Positively identifying the patient is essential to ensure the patient receives the right component

Any discrepancies in identity details must be resolved before taking the sample.
Do not use pre-labelled tubes.

Once identity has been confirmed the sample must be taken & tube labelled in one uninterrupted operation, **at the bedside**

- Labelling samples away from the bedside raises the risk of labelling it with another patient's details which could have a fatal outcome.
- Do not label a sample that someone else has taken
- Do not place EPR sticker on sample

Minimum data accepted on the sample

- Last name
- First name
- Date of birth
- NHS number (or Patient's unique number)
- Date and time of sample
- Details of the person who took the sample on the sample bottle

The person who took the blood sample must complete the following details on the EPR sticker/request form

- Date and time the sample was taken
- Clearly state their name or initials
  Send samples to the laboratory as soon as possible

If the sample is urgent, Transfusion Laboratory staff must be contacted to alert them that a sample has been sent and how it is being sent – chute or by hand.

6.7.4 Inadequately labelled samples

Samples missing core patient identifiers, or with one or more data items which do not match between the request and sample tube, will be rejected completely. Attempts will be made to notify the requestor if blood components have been requested. Under no circumstances will amendments or changes to samples be allowed once they have been received in the laboratory.

6.8 PRE-COLLECTION CHECKS

Please avoid calling the Transfusion Laboratory to check whether the blood component units are ready as this information is readily available on EPR.

To check whether blood components have been issued look on EPR in Results Review, Blood and Blood products. If blood components have been issued it will state “Products order complete” under the date that the transfusion sample was taken.

To prevent delays in starting the transfusion or blood components being wasted pre collection checks need to be done. Prior to collection ensure the patient has: -

- Valid prescription
- Recieved information regarding transfusion
- Verbally consented to the transfusion and this is documented in clinical records
- Had a full set of baseline observations taken within an hour of start of transfusion
- Venous or arterial access*

If **multi-lumen central venous access devices are used it is generally safe to co-administer other IV solutions through a different lumen as rapid dilution occurs in the blood stream*

6.9 COLLECTION OF BLOOD COMPONENTS

6.9.1 Who can Collect?

Registered and unregistered staff who have completed transfusion training and competency assessment can collect blood components

6.9.2 Collecting red cells and plasma (Fresh Frozen Plasma (FFP) or Octaplas)

Red cells and plasma units for named patients will be in a blood fridge depending on the location of the patient.

6.9.3 Collecting platelets, cryoprecipitate and granulocytes

Platelets, cryoprecipitate or granulocyte units will be in the Transfusion Laboratory. Laboratory staff will hand the appropriate unit to the practitioner who will complete all collection checks and document collection as for red blood cells.

Please note that the expiry date on the unit of FFP (2-year shelf life when frozen) will differ from the expiry date on the compatibility tag (5 days from defrosting if kept in fridge). Please ensure both dates have not passed.

6.9.4 Process for Collection of Blood components

The same process applies at every blood fridge, and transport box that is being used in place of a blood fridge. The processes detailed below are general principles that apply to every unit regardless of whether removed and checked manually or electronically.

- Entry to blood fridges is controlled: make sure you know how to access the blood fridge before going.
- Documentation with, last name first name, date of birth and unique number and the component(s) to be collected must be taken to the fridge:
- If the fridge is alarming, do not proceed and contact the Transfusion Laboratory immediately.
- Only one red cell unit can be removed at a time unless
    - There is a major haemorrhage and the units will be given within 30 minutes of removal
    - the unit is going into an approved transport box (Transfusion staff only)
    - is being taken immediately (within 30 minutes) to another blood fridge
- The blood component must be given to the person who asked for it to be collected
- It should be checked and put up immediately.
- If it cannot be administered immediately, the unit must be returned to the blood fridge within 30 minutes of removal.
- If red cells are not administered within 30 minutes and the patient still needs the unit, it can be commenced but must be stopped after the unit has been out of the fridge/transport box for 4 hours.
- If the patient no longer needs a blood component, it has to be returned to Transfusion Laboratory for disposal.

Depending on the hospital site, components are collected using a manual method or electronic system.

6.9.5 **The removal of Emergency group O Red Cell Units**

The Transfusion Laboratory must be informed that emergency O red cell unit has been removed so that they can replace it and details of the patient it is being transfused to.

Emergency Red cells are available at the following locations:

Site	Location	Number units available	Indication & bag colour
Ashford and St peters	BT laboratory	2 O RhD Negative units	Children and adults with childbearing potential
		2 O RhD Positive units	Adults with **NO** childbearing potential
	Maternity	2 O RhD Negative units	Children and adults with childbearing potential
		2 neonatal O RhD Negative unit	Paediatric cases
	SPH Theatre	2 O RhD Negative units	Children and adults with childbearing potential
		2 O RhD Positive units	Adults with **NO** childbearing potential
	SPH Theatre	1 neonatal O RhD negative unit	For C-sections
	Ashford Theatres	Remote release blood available including emergency blood	

The removal of Emergency group O blood **must** be recorded in the blood register or using BloodTrack where available and accessing emergency blood via the emergency access button.

6.11 ADMINISTRATION OF BLOOD COMPONENTS.

The Serious Hazards of Transfusion (SHOT) reporting scheme has noted that all cases of incorrect blood being given to a patient would have been prevented if the final check had occurred correctly AT THE BEDSIDE.

6.11.1 Who can administer:

Registered medical doctors, registered practitioners including nursing/midwifery staff and operating department practitioners, who have been trained and competency assessed in administration of blood components.

Staff that are not IV competent cannot connect the unit to the patient.

Students who have attended face-to-face training as part of their curriculum from their Higher Education Institute and completed their student nurse proficiency, may undertake pre-administration checks, under direct supervision by a registered trust member of staff who hold transfusion competency, in addition to two registered and transfusion competent members of staff as above, but should only observe the process of connecting the unit to the patient.

Associate Practitioners and other advanced practitioners should not take part in the administration process unless agreed by director of nursing and transfusion practitioner.
Agency staff should not take part in the transfusion process unless competency assessed by the trust Transfusion Practitioner.

The same two registered and competent members of staff must carry out this check using 2 **independent** checks **and one of these must connect the unit to the patient**

Both members of staff carrying out the check, must check the details on ALL of the documentation used in the process.

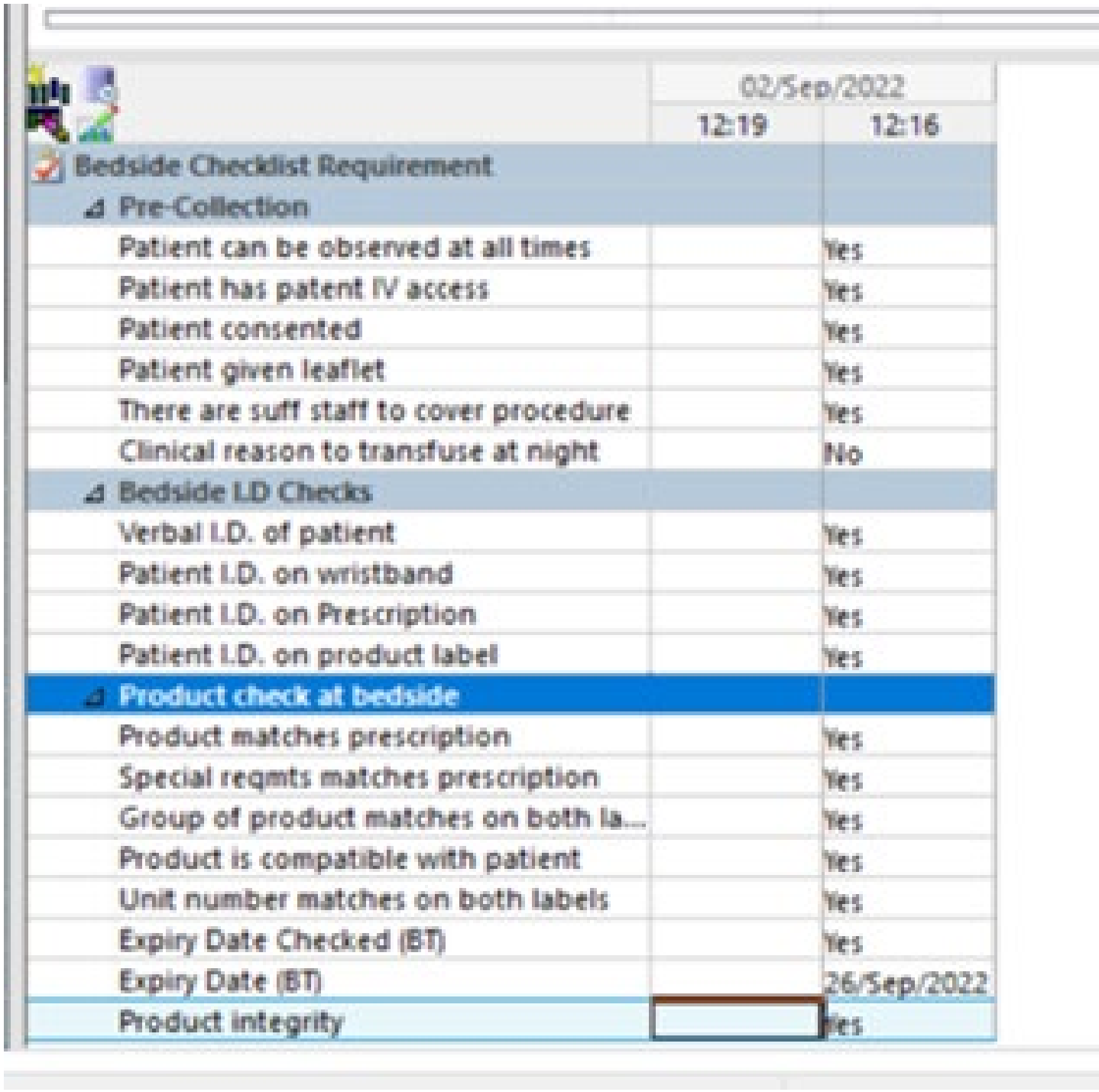
A single registered and competency assessed practitioner can perform these administration checks and connect the unit if approved by the clinical area, when transferring patients by ambulance or as part of the domiciliary transfusion process.

6.11.2 Administration checks

Positively identifying the patient is essential to ensure the right patient receives the right blood component; this check MUST take place next to the patient, by the practitioner who will connect the unit.
Any discrepancies in patient core identifiers must be resolved before starting the transfusion.

SHOT recommend a checklist must be used at the patient's side during the administration check. The following checklist consists of patient checks and blood component checks.

	Administration Checklist
Step	**Patient Checks**
1	Ask patient to state their full name and date of birth (DOB)
2	Check verbal response (full name and DOB) is the same as the patient's identification band including **spelling**
3	Check full name, DOB and NHS number on patient's identification band are the same as on the prescription including **spelling**
4	Check full name, DOB and NHS number on patient's identification band are the same as on the compatibility tag attached to the blood component including **spelling**
	Blood Component Checks
5	Check the blood component stated on the prescription is the same as the blood component received
6	Check donor unit number on the blood component is the same as on the compatibility tag attached to the blood component
7	Check blood group on the blood component is the same on the compatibility tag, both patient's and blood component. If unit and patient blood groups are not the same, check they are compatible
8	Check expiry date on the blood component
9	Check specific requirements (Irradiated / CMV negative) on the prescription is stated on the blood component
10	Inspect the blood component pack for signs of leakage or damaged packaging, and for unusual colour or clumping of contents



	02/Sep/2022	
	12:19	12:16
Bedside Checklist Requirement		
Pre-Collection		
Patient can be observed at all times		Yes
Patient has patent IV access		Yes
Patient consented		Yes
Patient given leaflet		Yes
There are suff staff to cover procedure		Yes
Clinical reason to transfuse at night		No
Bedside I.D Checks		
Verbal I.D. of patient		Yes
Patient I.D. on wristband		Yes
Patient I.D. on Prescription		Yes
Patient I.D. on product label		Yes
Product check at bedside		
Product matches prescription		Yes
Special reqmts matches prescription		Yes
Group of product matches on both la...		Yes
Product is compatible with patient		Yes
Unit number matches on both labels		Yes
Expiry Date Checked (BT)		Yes
Expiry Date (BT)		26/Sep/2022
Product integrity		Yes

If the patient is unable to confirm their identity start the check list at point three above
For administration of emergency O red cell units perform blood component checks only

If there is no identification band or equivalent then the transfusion cannot proceed
If any of the items listed above do not match, the transfusion must not proceed. The Transfusion Laboratory must be contacted for advice.

Component check

Compatibility checks are undertaken in the Transfusion Laboratory; units supplied may not be the exact group of the patient but should mirror what is stated below

Patient ABO D blood group	Compatible RED CELLS	Compatible FRESH FROZEN PLASMA / OCTAPLAS / CRYOPRECIPITATE	Compatible PLATELETS
Unknown	O	AB, A*, B*	AB, A*, B*, O*
O	O	O, A, B, AB	O, A, B, AB
A	A, O	A, AB, B*	A, AB, B*, O*
B	B, O	B, AB, A*	B, AB, A*, O*
AB	AB, A, B, O	AB, A*, B*	AB, A*, B*,O*
Pos	Pos or Neg	Not applicable	Pos or Neg
Neg"	Neg"	Not applicable	Neg"

Compatible blood groups are listed in order of preference.

*Issued when permitted due to component availability.

"D positive red cells & platelets may be issued for D negative women over the age of 50yrs and D negative male of any age according to availability and urgency of transfusion.

PRE-TRANSFUSION ADMINISTRATION ABO D BLOOD GROUP CHECK

Group O FFP / Octaplas / Cryoprecipitate MUST only be administered to Group O Patients

Compatibility of plasma components differs from red cells

When performing the pre-transfusion bedside check, you must check the blood component (Red Cells, Fresh Frozen Plasma, Octaplas, Cryoprecipitate, or Platelets) is compatible.

If the blood component blood group is **not** the same as the blood group of the patient, you must check the compatibility table over leaf or contact the transfusion laboratory if unsure.

Platelets should ideally be ABO group compatible but a crossmatch procedure is not required.

RhD negative children and adults of childbearing potential should receive RhD negative platelets. If unavailable RhD positive platelets can be given with anti-D prophylaxis.

A dose of 250 IU anti-D immunoglobulin should be sufficient to cover up to five adult therapeutic doses of D positive platelets given within a 6-week period.

In severely thrombocytopenic patients with platelet count of ≤30 × 10^9/L, anti-D Ig should be given subcutaneously, or IV if a preparation suitable or IV route is available, to avoid the risk of IM bleed following IM injection.

It is not necessary to administer anti-D Ig to Rh D negative adults without childbearing potential who receive D positive platelets

6.11.3 **Transfusing the unit**

See 'Notes on administration' (Table 5 over page) for duration

- Only prime the blood administration set after all checks have been carried out and are found to be correct.
- The administration set must be changed every 12 hours, or after 4 units, and taken down at the end of the transfusion.

- A new administration set must be used if a different component is to be given after red cell units
- **Under no circumstances should any drug be added to blood components.**

Infusion pumps specifically approved by the manufacturer for infusion of blood components / products may be used. A blood administration set, with a 170 - 200µm filter, as approved by the manufacturer of the pump must be used. Please refer to the Trust Medical Device Policy.

Blood warmers
Warmed blood is indicated:
- In patients with cold agglutinin disease (Transfusion Laboratory will indicate the need for this blood to warmed on the compatibility tag)
- When an adult flow rate of >50ml/kg/hr is required

Only those specifically approved by the manufacturer for infusion of blood components may be used
If Transfusion Laboratory is aware of a specific haematological indication that red cells need to be warmed they will indicate this on the compatibility tag.

Blood warmers are not routinely used and not available on all wards; they and the appropriate giving sets are often present in ED, Haematology Day Units, NICU, Recovery and/or Theatres. Staff in those areas should be trained in the use of blood warmers and will assist staff from other areas in the use of the warmers. Please refer to the Local Trust Medical Devices Policy.

Table 5: Notes on administration

Component / Product	Notes on administration
Red cells	Transfusions must be completed within 4 hours of removal from controlled temperature storage.
	Many patients can be safely transfused over 90–120 minutes per unit, however care must be taken with infusion rate in patients at risk of cardiac overload.
	During major haemorrhage, very rapid transfusion (each unit over 5–10 minutes) may be required.
	Some chronically transfused patients can safely be transfused See rapid Transfusion guidelines
Platelets	Transfused over 30 minutes per pool.
	Platelets should not be transfused through a giving-set already used for other blood components.
FFP/Octoplas	Infusion rate typically 10–20 ml/kg/hour, although more rapid transfusion may be appropriate when treating coagulopathy in major haemorrhage.
	Because of the high volumes required to produce a haemostatic benefit, patients receiving plasma must have careful haemodynamic monitoring to prevent TACO.
Cryo-precipitate	Typically administered at 10–20 ml/kg/hour (30 min per five-unit pool).
	Use within 4 hours of thawing. Do not refrigerate.
Granulocytes	Unit must be completed within 60 minutes. Do NOT place in fridge

(Handbook of Transfusion Medicine 5th Edition)

6.11.4 Documentation

Immediately after the unit has commenced, it is the responsibility of the persons administering the unit to document the following

- Date and time the blood component was commenced
- Donor unit number
- Volume
- Administration checks on EPR where available

Completion and return of compatibility tag

As soon as the unit has started, tear off the return section of the compatibility tag at the perforation (Green section) Leave the remaining portion (red section) and complete the relevant sections:

- Date and start time of blood component
- Staff members who administered the unit must print their name.
- Return the completed bottom portion of the compatibility tag to Transfusion via the pneumatic chute or designated collection points
- Leave the remaining portion of the compatibility tag on the blood component in case you need to reconfirm the identity of the recipient.

Emergency group O Red Cells

The compatibility label will have 'Emergency blood' as the surname and the first name will state where it is stored.

On the return portion of the compatibility tag complete the following and send back to the transfusion laboratory immediately

- the patient details (an addressograph label is acceptable)
- the date/time the unit was commenced
- who administered and checked the blood

Compliance with Medicines & Healthcare products Regulatory Agency (MHRA)

Blood safety and Quality legislation stipulates that records of cold chain and who received all blood components / products must be kept for 30 years in case of transmission of existing or new blood borne viruses.

Compliance is monitored by the Medicines and Healthcare Products Regulatory Agency (MHRA) is mandatory and is set at 100%.

6.12 CARE AND MONITORING OF PATIENTS DURING TRANSFUSION

Monitoring for acute blood transfusion reactions

- Observations are required for patients receiving any blood component
- Most severe reactions occur within 15 – 30 minutes of starting a unit.
- The registered professional caring for the patient is responsible for ensuring the patient is monitored.
    - A Health Care Assistant or Student may carry out this part of the process under the **direct supervision** of the registered professional.
    - In the operating theatres responsibility rests with the anaesthetist during surgery.
- Patients must be alerted by the clinical staff to the importance of reporting immediately any adverse effects such as shivering, rashes, flushing, itching, shortness of breath, pain in the loins or extremities or the passing of red urine. The staff caring for the patient must ensure that the patient is able to access help easily if left alone.
- Observations must be documented using Electronic or paper systems

Observation regime:

- Observations (pulse, blood pressure, temperature, respiratory rate) should be undertaken and documented for each unit transfused.
- Additional observations e.g. O2 saturation, Urine output and fluid balance should be recorded if indicated by the patient's condition. This is important for patients identified as at risk of overload.

Observations must be recorded at the following intervals as a minimum requirement:

- Baseline – within an hour of the start of the unit
- 15 minutes after the start time of the unit
- End observations within an hour of the unit finishing.
- Throughout the transfusion the patient must be visually observed for any signs of reaction.

Additional observations are at the discretion of the clinical area.
A patient with a temperature above 37^0C can receive a transfusion. However medical staff should determine if the transfusion should be postponed or continued as planned

If there are any concerns about any change in the patient's condition during a transfusion, the transfusion must be stopped immediately and senior/medical advice sought.
For domiciliary transfusion substitute calling a doctor for dialling 999 for an emergency ambulance.
See appendix 8: Acute Transfusion Reaction Management for further information on treating a suspected transfusion reaction.

Unconscious patients require particular attention. Transfusion reactions must be suspected if the patient's condition deteriorates or if dyspnoea, hypo/hypertension, haemoglobinuria or unexplained increased bleeding occurs.

6.13 COMPLETION OF THE BLOOD UNIT

The time each unit was completed must be documented and is important information if the patient has a transfusion reaction. Document the end time of each unit in Clinical Documentation on EPR.

If the blood component is completed uneventfully the empty bag should be disconnected and discarded into a clinical waste bag. Check the return part (green) of the compatibility tag has been removed and sent back to the Transfusion Laboratory

6.13.1 Post Transfusion Laboratory Testing

Following transfusion of a blood component, a blood sample should be taken to establish the benefit of the transfusion. The tests and timings are stated below: -

- Red cells - FBC within 48 hours
- Platelets - FBC within 24 hours
- Plasma - Clotting screen within 24 hours
- Cryoprecipitate - Fibrinogen levels within 24 hours

For patients being transfused as a day patient, with either red cells or platelets, a post transfusion FBC does not need to be taken.

6.14 ADVERSE EVENT REPORTING

Severe transfusion reactions and events are reported locally at each Trust using the Incident reporting system, to the Serious Hazard of Transfusion scheme and to the Medicines and Healthcare Products Regulatory Agency under "The Blood Safety and Quality Regulations 2005 No 50".

6.14.1 Process for reporting adverse events: Near Miss and Clinical Incidents

Serious Adverse Events (SAE's) and/or Reactions (SAR's) requiring urgent attention must be reported directly to

- Consultant responsible for the patient
- Consultant Haematologist
- Transfusion Practitioner (in hours) or transfusion laboratory out of hours

The person first detecting the error must follow the Local Trust incident policy & complete a standard 'Incident reporting Incident Form' in all cases. When completing the electronic Incident reporting form categorise it as a blood transfusion incident; Transfusion Practitioners will then be automatically notified by email.

The Transfusion team will:

- Investigate the incident
- Work with key stakeholders to identify corrective and preventative actions and monitor completion of these
- Report to appropriate forums, e.g., BSPS Joint Patient Blood Management Team and Hospital specific Patient Blood Management Committees, Clinical Governance, Operational Risk Management Group, Clinical Risk Management Group.
- Report incidents to the Medicines and Healthcare Regulatory Agency via the Haemovigilance scheme Serious Adverse Blood Reactions and Events (SABRE) as required and Serious Hazards of Transfusion (SHOT) organisation.

7. Training

7.1 **Training & knowledge assessment**

All clinical/medical staff involved in the transfusion process will receive training at their induction (Blood Transfusion Health Service Circular 2007/001). Thereafter at all sites updates and knowledge assessments are provided on a minimum 2/3 yearly basis (National Blood Transfusion Committee 2016 as part of mandatory training which will either be face to face or via E-learning and assessment. The training will be appropriate to the role they are expected to undertake.

7.2 **Competency**

Staff cannot play any part in transfusion without being competency assessed by a qualified assessor in the part of the process relevant to their role This is a once only requirement unless the practitioner is involved in an incident or their capability is questioned. The TP team have created an approved transfusion competency document based on the tool created by National Patient Safety Agency in response to the SPN 14 and reviewed following the publication of the NBTC 2015 requirements.

7.3 **Student Nurses**

Students must attend face-to-face training for theory and practical skills from their university prior to direct supervision by a registered Trust member of staff who holds competency in transfusion.
Evidence of training by the student must be supplied on request.
All actions must be documented by the student in the relevant paperwork.
Students must read, understand, and adhere to the processes set out in this policy.
Students will seek first hand exposure of transfusion, if unable to get signed off in a ward setting will attend Annexe B skills days and have the proficiency signed off by the Learning Environment Lead as simulated and under OSCE conditions.

7.4 **Training for Domiciliary Transfusion**

Staff undertaking domically transfusion must comply with their organisations training and competency requirements and must be competent to manage anaphylaxis & carry an anaphylaxis kit containing adrenaline.

7.5 **Recording of Training & Competency**

Attendance sheets are taken at every training and competency session. These are used to maintain records of training and competency status. All training and competency are recorded on the relevant Trust database.

Compliance reports are generated by the TP team and discussed at the PBMT, PBMC's. Compliance reports are also shared with ward managers as

required but with particular emphasis on areas where compliance needs attention.

7.5 **Non-Attendance**

Non-attendance at transfusion training or induction sessions is managed in line with the trust training policy. Non-attendance at competency sessions is managed by the TP team.

Satellite: Non-attendance at blood sessions is managed locally by the hospital where the session is taking place.

7.6 **Failure to achieve competency/pass knowledge assessment**

Staff who fail to complete a satisfactory competency assessment will have an action plan agreed between the individual, their ward manager and the TP team. The individual is given the opportunity to develop and to be assessed at a later date once this is complete.

Failure of the knowledge assessment will result in reassessment; subsequent failure to pass the assessment will be managed with the relevant Manager and will result in suspension/discontinuation of competency.

8. Stakeholder Engagement and Communication

This document was extensively reviewed by members of the Joint Patient Blood Management Team and ASPH Patient Blood Management Committee.

9. Approval and Ratification

Ratification of this policy will be sourced from the patient Blood management Committee (PBMC), BSPS Patient Blood management Team (PBMT) and the Safety and Quality Governance Committee.

10. Dissemination and Implementation

This policy must be implemented and disseminated throughout the Trust immediately following ratification and will be published on the Trusts intranet site. Access to this document is open to all.

11. Review and Revision Arrangements

This document will be reviewed 3 yearly or whenever national policy or guideline

changes are changed (whichever occurs first), primarily by the Patient Blood Management Team. The policy will then be subject to re-ratification as outlined on the cover page of this document. Out of date policies are archived electronically.

12. Document Control and Archiving

This is a Trust-wide document and archiving arrangements are managed by the Quality Department, who can be contacted to request master/archived copies.
On the internet site, the document will be highlighted as green, when in date, amber 3 months prior to review date, and red if expired.
Responsibility for archiving trust-wide policies lies with the Head of Regulation & Accreditation. Electronic folders are set up to hold master copies. Requests for retrieval of documents can be made to the Head of Regulation & Accreditation.

13. Monitoring compliance with this Policy

Audits of practice against the Blood Transfusion Policy are undertaken at intervals pertinent to the Trust and as relevant to any incidents, identified risks or concerns relating to levels of training and competency. The minimum audit frequency will be one audit of approximately 20 patients over the year.
The audit will be of the care and management of patients receiving transfusions and will be undertaken by the Transfusion Practitioners to monitor the following: -

- Training and competence
- Informed consent
- Appropriateness of transfusion
- Patient identity and blood component checks
- Patient monitoring and care-plan/observation chart completion (N.B. when auditing
- transfusion observation timings a 5-minute window either side of the 15 and 30
- minute observations are allowed).
- Traceability

An action plan will be developed in the report, and monitored at the PBMT and PBMC.
An annual report is also presented at the PBMT each year, by the TP team
The report includes:

- Summary of the above audit and any other pertinent audits
- Reports on training and competency assessment achievements against targets
- Reports on incidents including trends and corrective/preventative actions taken
- Policy and guideline updates
- Reports on traceability target achievement
- National and local initiatives

Where monitoring identifies deficiencies recommendations and action plans will be developed and changes implemented accordingly. The PBMT and PBMC's will monitor the implementation of the action plan and report completed actions to the various appropriate committees.

14. Supporting References / Evidence Base

14.1 References

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CMO's National Blood Transfusion Committee *"The appropriate use of group O RhD Negative red cells"* 2019
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APPENDIX 1: EQUALITY IMPACT ASSESSMENT

Equality Impact Assessment Summary	
Name: Blood Transfusion Policy & Related Guidelines for Adult Patients	**Title:** Kim east, Lead Transfusion Practitioner Matthew Rogers, BSPS Haematology Consultant PBMT chai
Policy **Blood Transfusion Policy & Related Guidelines for Adult Patient**	

Background

- Who was involved in the Equality Impact Assessment

This policy was circulated for comment to: BSPS Patient Blood Management Team members, Patient Blood Management Committee members; Clinical Leads for Transfusion; BSPS Transfusion Practitioner Team

Methodology

- A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age)
- The data sources and any other information used
- The consultation that was carried out (who, why and how?)

The aim of the policy and guidelines is to standardize practice relating to clinical need. The existing guidelines were reviewed by the Transfusion Practitioner Team to assess whether any patient groups would be impacted in terms of equality by the policy/guidelines.
The Blood Transfusion Policy and related guidelines, and the activities of the Transfusion Practitioner Team are governed by the Department of Health, Care Quality Commission, the British Society for Haematology, the Medicines and Health Care Regulatory Agency and the Serious Hazard of Transfusion Scheme. The policy and guidelines provide information in accordance with meeting the requirements of these bodies.
Patient suitability for the administration of blood is determined by clinical need and verbal consent to treatment is gained prior to transfusion. Any patient for whom blood products are not appropriate, or who declines transfusion, is offered alternative treatment or is counselled on the impact of declining treatment where the alternatives are not acceptable. Examples: Jehovah's Witness patients or individuals refusing blood products may be offered iron supplementation, clotting factors, synthetic volume expanders, or other appropriate interventions.

Key Findings

- Describe the results of the assessment
- Identify if there is adverse or a potentially adverse impacts for any equality's groups

The policy and related guidelines are designed to standardise practice based on national evidence based guidance.
Race: no negative impact
Ethnic origin: no negative impact
Disability: no negative impact
Gender: Where treatments differ for men and women this is essential for the protection of unborn children and is based on national evidence-based guidance.
Culture: no negative impact
Religion: the connecting guideline for managing patients who refuse transfusion has been agreed with the Jehovah Witness Hospital Liaison.
Age: Consideration for female patients who are no longer of child bearing potential are evidence based and designed to protect the patient and the wider population in case of blood shortages

Conclusion

- Provide a summary of the overall conclusions

The Trust has the required policy, guidelines and arrangements/services to meet individual needs in regards to Transfusion practice.

Recommendations

- State recommended changes to the proposed policy as a result of the impact assessment
- Where it has not been possible to amend the policy, provide the detail of any actions that have been identified
- Describe the plans for reviewing the assessment

No changes required.
The policy and equality impact assessment will be reviewed 3 yearly, as a minimum, and as practice and guidelines change.

APPENDIX 2: CHECKLIST FOR THE REVIEW AND APPROVAL OF DOCUMENTS

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document: Blood Transfusion Policy & Related Guidelines for Adult Patients
Policy (document) Author: Kim East and Matthew Rogers
Executive Director: NA

		Yes/No/ Unsure/ NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	**Yes**	
	Is it clear whether the document is a guideline, policy, protocol or standard?	**Yes**	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	**Yes**	
	Is the purpose of the document clear?	**Yes**	
	Are the intended outcomes described?	**Yes**	
	Are the statements clear and unambiguous?	**Yes**	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	**Yes**	
	Who was engaged in a review of the document (list committees/ individuals)?	**Yes**	ASPH Patient Blood Management Committee, Joint BSPS Patient Blood Management Team
	Has the policy template been followed (i.e. is the format correct)?	**Yes**	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	**Yes**	
	Are local/organisational supporting documents referenced?	**Yes**	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	**Yes**	

		Yes/No/ Unsure/ NA	Comments
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	**NA**	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	**Yes**	Through training and dissemination (ASPIRE)
	Does the plan include the necessary training/support to ensure compliance?	**Yes**	Transfusion Practitioner in post
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**Yes**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**Yes**	3 years or before if national guidance necessitates
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**Yes**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	Yes	

Committee Approval

(insert name of Committee)

If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner

Name of Chair	**Caroline Pocknall**	**Date**	**14/06/2023**

Ratification by Management Executive

(if appropriate)

If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner

Date: n/a

APPENDIX 3: INDICATIONS FOR RBC, PLT, FFP, CRYO

NICE Transfusion Guidelines & Recommendations

NICE published their first transfusion guidance in November 2015 (NG 24) This and the National Blood Transfusion Committee (NBTC) indication codes (2020) are used as a base for indications below

RED CELLS

Red cell indications

Indication code/source	Indication	Threshold Hb	Target Hb
R1	Acute Bleeding	Aim for normovolaemia & then use frequent Hb measurement to guide use of red cells to following thresholds.	
R2	Acute anaemia in a stable patient	< 70 g/L	70–90 g/L
R3	Acute coronary syndrome in a stable patient	< 80 g/L	80-100 g/ L
R4	Chronic transfusion-dependant anaemia	< 80 g/L	Patient specific to prevent symptoms
R5	Radiotherapy	<100g/L	>100g/L
R6	Exchange Transfusion	Patient specific	Patient specific

PLATELETS

Based on National Blood Transfusion Committee Indication codes (2020) & British Society for Haematology Use of Platelet Transfusions Guideline (2016).

Indication code/source	Indication	Thresholds
P1	Prophylaxis in reversible bone marrow failure	< 10 x 10^9 per litre
P2	Prophylaxis & sepsis / haemostatic abnormality or other risk factors for bleeding	10 - 20 x 10^9 per litre
P3	To prevent bleeding associated with invasive procedures	
P3a	Central venous line	< 20 x 10^9 per litre
P3b	Lumbar puncture / spinal anaesthesia	< 40 x 10^9 per litre
P3c	Pre-percutaneous liver biopsy / major surgery	< 50 x 10^9 per litre
P3d	Epidural anaesthesia	< 80 x 10^9 per litre
P3e	Critical site surgery e.g. CNS including eye	< 100 x 10^9 per litre
P4	Therapeutic use to treat bleeding (WHO bleeding grade 2 or above)	
P4a	Major haemorrhage	< 50 x 10^9 per litre/ (Order at <75x 10^9)
P4b	Empirically in a major haemorrhage pack	
P4c	Critical site bleeding e.g. CNS including eye / traumatic brain injury	< 100 x 10^9 per litre
P4d	Clinically significant bleeding	< 30 x 10^9 per litre
P5	Specific Clinical Conditions	
P5a	DIC pre-procedure or if bleeding	Patient specific
P5b	Immune thrombocytopenia (emergency treatment pre-procedure / severe bleeding)	
P6	Platelet dysfunction	
P6a	Consider if critical bleeding on anti-platelet medication	
P6b	Inherited platelets disorders as directed by specialist in haemostasis	

Appendix 3

2.1 **Contraindications:**

- Chronic Bone Marrow failure (unless receiving intensive treatment)
- Autoimmune thrombocytopenia (as prophylaxis, may need therapeutically)
- Heparin induced thrombocytopenia
- Thrombotic thrombocytopenic purpura
- Bone Marrow aspiration
- PICC line
- Traction removal of tunnelled CVC's

Appendix 3

2.2 **Platelet Doses**

- Do not routinely transfuse more than a single dose of platelets.
- Only consider giving more than a single dose of platelets in a transfusion for patients with severe thrombocytopenia & bleeding in a critical site, such as the central nervous system (including eyes).
- One pool typically raises the platelet count by $20–40\times10^9$ per litre however it cannot be assumed that the platelet count will rise & a preoperative platelet count should be checked to ensure that the above thresholds have been reached. However, in minor invasive procedures a post-transfusion count is not always necessary. In some patients with certain conditions or a consumptive process, a documented count >50 is often unachievable. Platelet transfusion should then be given immediately prior to procedure.

These are guidelines. Individual patient circumstances need to be considered & discussed with a senior Haematologist (e.g. patients with refractoriness, emergencies, & patients with specific targets set (i.e. by tertiary centres)).

FRESH FROZEN PLASMA (FFP)

Based on National Blood Transfusion Committee Indication codes.

Indication code/source	Indications	Thresholds & Targets
F1	Massive haemorrhage	1:1 ratio of RBC: FFP for trauma
F2	PT ratio / INR > 1.5 with clinically significant bleeding	FFP required if coagulopathy; aim for a PT & APPT ratio of ≤ 1.5
F3	PT ratio / INR > 1.5 & pre-procedure / surgery	Prophylactic use when coagulation results are abnormal e.g. DIC & invasive procedure planned with risk of PT ratio / INR > 1.5
F4	Liver disease with PT Ratio/INR > 2 & pre-procedure	FFP should not be routinely administered to non-bleeding patients or before invasive

		procedures when the PT ratio / INR is < 2.
F5	TTP / plasma exchange.	Patient specific
F6	Replacement of single coagulation factor for which no virus-safe fractionated or recombinant product is available	Patient specific

Appendix 3

3.1 **FFP:** Plasma separated from red cells & filtered to remove white blood cells. Apart from standard FPP, there are also two types of pathogen-reduced (virally inactive) FFP available:

- Methylene blue light treated FFP (MB-FFP)
- Solvent detergent treated FFP (SD-FFP, "Octaplas")

Appendix 3

3.2 **Indications**

Appendix 3

3.3 **Contra-indications**

- Do not offer fresh frozen plasma transfusions to correct abnormal coagulation in patients who need reversal of a vitamin K antagonist; use prothrombin complex concentrate if available. *See appendix F*
- There is no evidence that prophylactic replacement regimens prevent DIC or reduce transfusion requirements.

Appendix 3

3.4 **FFP Doses**

Standard adult dose: 15mL/Kg. Reassess the patient's clinical condition & repeat the coagulation tests after fresh frozen plasma transfusion to ensure that they are getting an adequate dose, & give further doses if needed.

CRYOPRECIPITATE

Based on National Blood Transfusion Committee Indication codes.

Appendix 3

4.1 Cryoprecipitate is produced after freezing, & then thawing plasma, to precipitate high molecular weight proteins such as Factor VIII, von Willebrand factor & Fibrinogen. Cryoprecipitate is available as single donor packs, or as pools of 5 donations.

Appendix 3

4.2 **Indications**

Indication code/source	Indication	Threshold
C1	Clinically significant bleeding	fibrinogen level < 1.5 g/L (<2g/L in obstetric bleeding)
C2	Pre invasive procedures with a risk of clinically significant bleeding.	fibrinogen level < 1.0 g/L
C3	Bleeding associated with thrombolytic therapy	Patient specific
C4	Inherited hypofibrinogenaemia, where fibrinogen concentrate not available	Patient specific

Appendix 3

4.3 **Contra-indications**

Do not offer cryoprecipitate transfusions to correct the fibrinogen level in patients who are not bleeding, & are not having invasive procedures or surgery with a risk of clinically significant bleeding.

Appendix 3

4.4 **Doses**

- 2 pools (equivalent to 10 individual units) will increase fibrinogen by approximately 1 g/litre
- Reassess the patient's clinical condition, repeat the fibrinogen level measurement & give further doses if needed.

Appendix 3

5.0 GRANULOCYTES

Indications for Granulocytes

The decision to administer granulocytes must be made following discussion with the consultant Haematologist and discussion with NHSBT haematology consultant.

- Initial dose is 2 pools every day for 7 days (although not available from NHSBT on Sundays)
- Each pool has 2.5 donations of platelets (therefore platelets are not required)

Instructions on administration

1. Transfusion lab will phone the ward when granulocytes arrive in the lab and inform them that they have started crossmatching them. **This will take about an hour.**

2. Pre-medication with paracetamol 1g, IV Hydrocortisone 100mg and Piriton 10mg 20 – 30 minutes prior to commencing transfusion. So, 30 minutes after you receive a phone call from the lab to say the granulocytes have arrived.

3. Once granulocytes are crossmatched, the lab will contact ward to inform them they are ready. The lab will arrange a porter to bring the granulocytes to ward.

4. Granulocytes must be administered immediately they arrive in clinical area. They should be kept at room temperature not placed in a fridge. They should not be agitated.

5. If there is a decision not to transfuse granulocytes contact Transfusion lab immediately

6.

7. Administer each bag over 1 hour through a standard blood administration set. Start slowly for the first 15 minutes – no greater than 5mls/minute. If no reaction noted then increase rate. Give one bag immediately after the other. Each bag is about 250 mls, and contains approximately 2.5 donations of platelets so platelet count should increase.

8. Do NOT use an infusion pump. Use following equation

$$\frac{\text{Volume to be infused (mls)}}{\text{Time in minutes}} \times \frac{\text{drop rate}}{1} = \text{Rate} \qquad \frac{240}{60} \times \frac{15}{1} = 60 \text{ drps/min}$$

9. Granulocytes CAN go through a PICC line but may not run well, so use a pink cannula.

10. They must be ABO and Rh D compatible with the patient. They will be irradiated.

11. Record Temperature, BP, Pulse, and Respiratory rate and oxygen saturations every 15 minutes during the transfusion and then every 30 minutes for an hour post transfusion.

12. In the event of a drop-in saturations (less than 90%), dyspnoea, cyanosis or pulmonary oedema, stop infusion and seek urgent medical help. Report reaction to transfusion lab.

13. Perform Administration Checks by bedside as for all other blood components

14. Please note, as long as they are started before midnight on day of expiry. You can complete the transfusion of the whole unit.

Any questions or concerns, please contact Haematology on Call via switchboard.

APPENDIX 4: TRANSFUSION ASSOCIATED CIRCULATORY OVERLOAD ASSESSMENT

SHOT recommends that a formal pre-transfusion risk assessment for TACO should be performed. Patients at risk include patients with low body weight, patients more than 70 years old and those with concomitant medical conditions (including cardiac failure, renal impairment, hypoalbuminemia and fluid overload).

TACO Checklist	Red cell transfusion for non-bleeding patients	If 'yes' to any of these questions
	Does the patient have a 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?	1 • Review the need for transfusion (do the benefits outweigh the risks)?
	Is the patient known to have pulmonary oedema? Does the patient have respiratory symptoms of undiagnosed cause?	2 • Can the transfusion be safely deferred until the issue can be investigated, treated or resolved?
	Is the fluid balance clinically significantly positive? Is the patient on concomitant fluids (or has been in the past 24 hours)? Is there any peripheral oedema? Does the patient have hypoalbuminaemia? Does the patient have significant renal impairment?	3 • Consider body weight dosing for red cells (especially if low body weight) • Transfuse one unit (red cells) and review symptoms of anaemia • Measure the fluid balance • Consider giving a prophylactic diuretic • Monitor the vital signs closely, including oxygen saturation

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.

APPENDIX 5: SPECIFIC REQUIREMENTS FOR BLOOD COMPONENTS

Specific patient groups have specific requirements relating to blood components
There are currently 2 specific requirements:

- Cytomegalovirus (CMV) Negative blood components
- Irradiated blood components

Cytomegalovirus (CMV)

CMV is a common herpes virus that causes asymptomatic infection or a mild glandular fever-like illness in most healthy individuals; however, infection can cause serious morbidity in certain immuno-compromised CMV negative patients. The use of CMV negative cellular components minimises this risk.

Irradiated blood components

Irradiated blood components are indicated for patients at risk of transfusion associated graft-versus-host disease (TAGvHD). This is a rare, but usually fatal complication of transfusion due to the presence of viable alloreactive T lymphocytes in a transfusion. TAGvHD can be prevented by irradiating the donation to prevent division of lymphocytes. It is therefore important that patients at risk of developing TAGvHD are identified before transfusion & given irradiated blood. NB: there is no radiation risk from irradiated blood components and they can be safely given to any patient

Identification, request & Documentation of specific Requirements

- The need for specific requirements should be considered & identified at the earliest opportunity
- Communicate with Transfusion Laboratory via the request at the earliest opportunity; do not assume Transfusion Laboratory are already aware
- Some specific requirements may not be in stock so early communication between the clinician & Transfusion Laboratory is essential to avoid delay.
- In life-threatening/life-saving circumstances blood components unscreened for the specific requirement can & should be used if the required products are not readily available.
- A dated entry should be made into the notes section of the patient's case records stating the need for the specific requirement, the reason & the duration. Cessation of need, including the reason, should also be documented.
- The need & reason for the specific requirement should be clearly indicated on every transfusion request form.
- Each prescription must clearly indicate that the specific requirement is required.
- The need for the specific requirement should be recorded in any Alert Areas on patient records & struck through when no longer required.
- The laboratory should be informed when the specific requirement is no longer required.

For irradiated blood the patient should be given:
The NHSBT '*Information for patients needing irradiated blood' patient information leaflet*; this includes an alert card explaining the need for irradiated blood which must be completed & given to the patient
The patient should be made aware of the need to carry & show their alert card prior to future transfusions especially when attending other hospitals

Specific Requirements indications and components chart for Adults

IRRADIATED Indications: red cell & platelets	NOTES
All donations from 1st & 2nd degree relatives even if patient is immuno-competent	
Allogeneic Haematopoietic Stem Cell Transplant (HSCT) recipients	From the time of initiation of conditioning chemo/radiotherapy. Irradiated components should be continued until all of the following criteria are met: 1.>6 months have elapsed since the transplant date 2.The lymphocyte count is >1.0x 10^9/l 3.The patient is free of active chronic GvHD 4.The patient is off all immunosuppression The recommendation applies for all conditions where HSCT is indicated regardless of the underlying diagnosis
If chronic GvHD is present or continued immunosuppressive treatment is required.	Irradiated blood components should be given indefinitely
Bone marrow and peripheral blood stem cell donors of all ages	For 7 days prior to or during the harvest
Autologous or Allogeneic Bone Marrow Transplant or Stem Cell Transplant recipients	from initiation of conditioning chemo/radiotherapy until 3 months post-transplant (6 months if total body irradiation was used in conditioning)
Patients undergoing bone marrow or peripheral blood stem cell 'harvesting' for future autologous re-infusion.	during and for 7 days before the bone marrow/stem cell harvest
Hodgkin Lymphoma (lifelong)	All adults and children with Hodgkin lymphoma at any stage of the disease should have irradiated red cells and platelets for life.
Treatment with purine analogue drugs (fludarabine, cladribine and deoxycoformicin, bendamustine, clofarabine)	Lifelong
Treatment with alemtuzumab	Patients with CLL or other haematological diagnosis only (not those treated for MS)
Patients receiving ATG or other T-lymphocyte-depleting serotherapy for Aplastic anaemia or rare types of immune dysfunction conditions	Life long
Patients undergoing peripheral blood lymphocyte collections for future CAR-T cell re-infusion	7 days prior to & during the harvest, until 3 months following CAR-T cell infusion
Granulocyte transfusions	
CMV NEGATIVE Indications RC & platelets	**NOTES**
Elective transfusions in Pregnancy	Not during delivery

APPENDIX 6: STORAGE OF BLOOD AND BLOOD COMPONENTS

Red Blood Cells (RBC)

- Must only be stored at 4^0C +/- 2^0C in a blood refrigerator or an accredited blood transport box
- N.B. Blood retrieved from intraoperative cell salvage must not be stored in a blood fridge; see local policy.

Blood fridges

- The blood refrigerator must not be used for any other purpose.
- Access to the blood refrigerator must be restricted to relevant staff
- Wards/Departments that have their 'own' blood fridge must follow the instructions for its maintenance and regular checks in the relevant SOP's

Transport boxes

- Accredited transport boxes keep blood at the correct temperature for a set time frame while sealed; ensure you confirm the timeframe with Transfusion Laboratory who supply the transport boxes
- Once the seal on the transport box has been broken, the blood must either be transfused within 4 hours, returned to a blood fridge within 30 minutes or returned to Transfusion Laboratory immediately

Platelets

- Must be stored at 22^0C +/- 2^0C.
- NEVER store in a blood refrigerator or transport box.

Thawed Plasma

- After thawing, and when FVIII replacement is not required, FFP may be stored at 4^0C +/- 2^0C in a blood fridge/transport box before administration to a patient
- Once removed from blood fridge it cannot be returned after 30 minutes

The infusion must be completed within 24 hours of thawing.

Thawed Cryoprecipitate

- Must be stored at room temperature and the transfusion completed within 4 hours of thawing.

Granulocytes

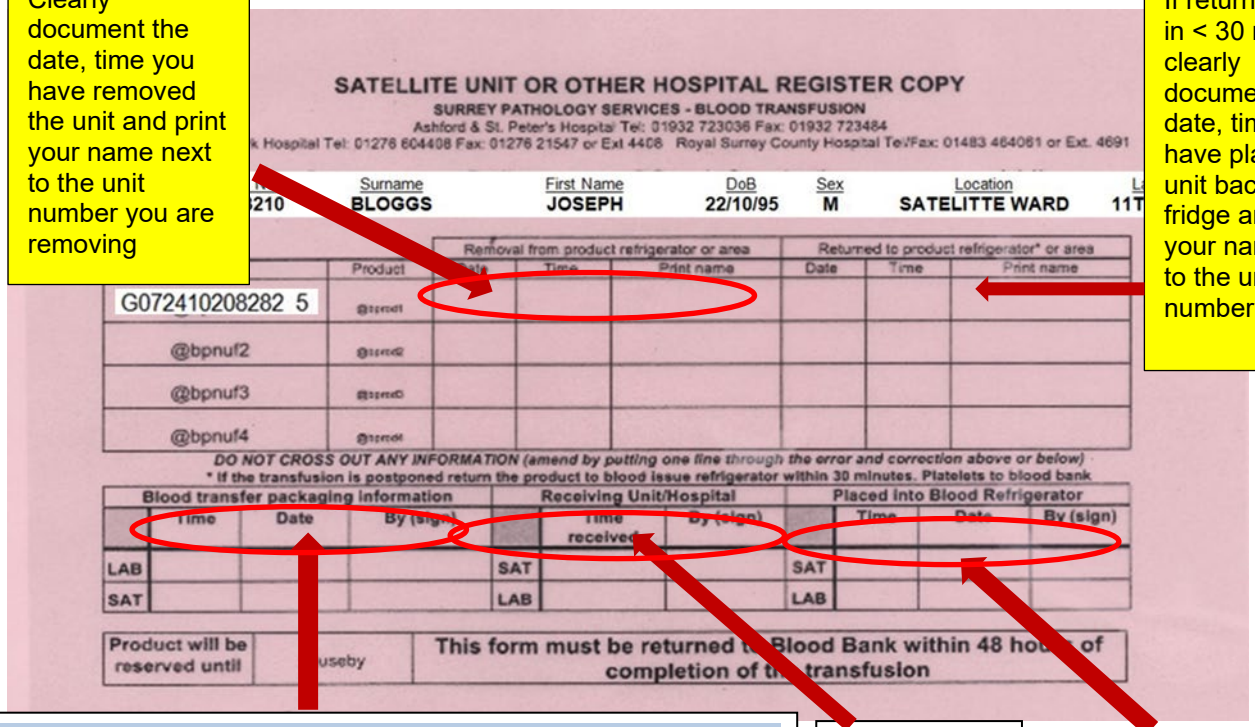
- Must be stored at 22°C +/- 2°C. (But not agitated)
- NEVER store in a blood fridge or cool box

APPENDIX 7: BLOOD COLLECTION PROCESS
Ei: Manual

- Remove the correct unit; ensure fridge is closed completely
- If using a transport box, replace the lid. Once a transport box lid/fridge has been opened any component still inside must be either transfused within 4 hours of opening the box/fridge, OR returned to a blood fridge within 30 minutes of opening the box. If this is not possible the component must be returned to Transfusion Laboratory for immediate disposal.
- Check the surname, first name, date of birth and patient's unique number exactly match on approved document and the compatibility tag attached to the blood.
- Then check on the 2 labels on the blood (compatibility tag and blood bag label) that the unit number, blood group including RhD status, expiry date and type (i.e., red cells) exactly match.
- If all details exactly match, and the unit is in date, then record removal by printing your name, and the date and time of removal, against the correct unit number on the appropriate register form in the folder by the fridge/product. (See Yellow instructions below). If transferring the unit to a satellite site or refrigerator please complete the bottom section of the satellite form (blue instructions below) with the date and time the units are packed, received and placed into the refrigerator
- Document the time removed, the product collected and the unit number on the transfusion care pathway (where one is in use).
- If there is any discrepancy in the details at any point, do not continue; notify Transfusion Laboratory by phone and return the unit to them immediately.

Clearly document the date, time you have removed the unit and print your name next to the unit number you are removing

If returning unit in < 30 mins, clearly document the date, time you have placed the unit back in the fridge and print your name next to the unit number



SATELLITE UNIT OR OTHER HOSPITAL REGISTER COPY

SURREY PATHOLOGY SERVICES - BLOOD TRANSFUSION

Ashford & St. Peter's Hospital Tel: 01932 723036 Fax: 01932 723484

k Hospital Tel: 01276 604408 Fax: 01276 21547 or Ext 4408 Royal Surrey County Hospital Tel/Fax: 01483 464061 or Ext. 4691

Surname	First Name	DoB	Sex	Location	L
BLOGGS	JOSEPH	22/10/95	M	SATELITTE WARD	11T

	Product	Removal from product refrigerator or area Date	Time	Print name	Returned to product refrigerator* or area Date	Time	Print name
G072410208282 5							
@bpnuf2							
@bpnuf3							
@bpnuf4							

DO NOT CROSS OUT ANY INFORMATION (amend by putting one line through the error and correction above or below)

* If the transfusion is postponed return the product to blood issue refrigerator within 30 minutes. Platelets to blood bank

Blood transfer packaging information			Receiving Unit/Hospital			Placed into Blood Refrigerator		
	Time	Date	By (sign)		Time received	By (sign)		Time	Date	By (sign)
LAB				SAT			SAT			
SAT				LAB			LAB			

Product will be reserved until	useby	This form must be returned to Blood Bank within 48 hours of completion of transfusion

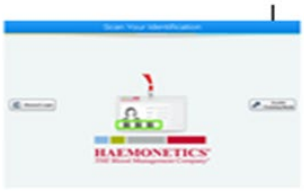
Packing time and date completed by blood transfusion lab
Remember the transport box is valid for 3 hours from this time provided the box remains sealed
(Packing information is also found on the packing label on the outside of the box)

Document time transport box received

Document time placed into fridge

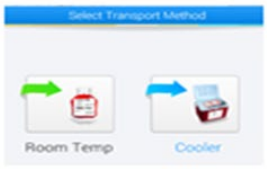
Eii: using Bloodtrack Remote Release Blood fridge (available at Ashford Theatres and St Peters Maternity Fridge

1. Scan your ID (Barcode facing up)



2. Select 'taking out' and choose transport method

(This will normally be room temperature unless blood is going to be packed in designated transport boxes for transport to another site or hospital in which case you should select cooler)



3. Enter patients unique number and choose search (NHS no. where available)
check all patient details match exactly.

If no blood is available you will see this:

Contact blood transfusion for advise.
in an emergency use the emergency bloc

4. Remove the unit from the tray (lit in blue) and scan the unit number highlighted in green

5. A patient tag will be printed, confirm this has printed successfully and attach to the unit

6. Scan the unit number followed by the compatibility tag barcode within 60 seconds

7. If the unit scanned is **not safe** for use a **red warning** will appear:
DO NOT TAKE THIS UNIT
Return it to the fridge and contact Transfusion on Ext 3036 or out of hours bleep 5070

RETURN (MOVING BLOOD IN) RED CELLS AND FFP ONLY

BloodTrack® Putting In-Quick Reference Guide

1. Scan your ID (Barcode facing up)

2. Select 'putting in'

3. Scan Unit number (Highlighted in green)

Put unit in the fridge
Place units in fridge according to surname and the order in which the units will be used i.e. the oldest unit at the front.

If using haemobank place in the draw
lit in blue. If the draw is not empty touch here

4. If the transaction is ok you will get:

If there is something wrong with the unit you will get:
Contact Transfusion for advice

5. Scan the next unit number to continue or touch log out

APPENDIX 8: ACUTE TRANSFUSION REACTION MANAGEMENT

Definition of a transfusion reaction

Transfusion reactions can be defined as any adverse effect on the patient which may have been caused by the administration of blood, blood products or blood components both during the transfusion, & in the 28 days following a transfusion.

Management of a transfusion reaction

Initial treatment of ATR is not dependent on classification but should be directed by symptoms & signs. Treatment of severe reactions should not be delayed until the results of investigations are available. Please see below for flow chart detailing management of the signs & symptoms of a transfusion reaction according to the severity of the reaction.

Samples to be taken:
Blood Cultures where infection is suspected
Citrate **(Pale Blue top)**: Clotting Screen to look for coagulopathy
Serum (**Red top**): Additional transfusion tests
Serum (**Red top**): U&E, LFT, Bilirubin, CRP, LDH, check for haemolysis or sepsis
EDTA (**purple top**): FBC check for haemolysis
6mL EDTA (**pink top**): G&S –to confirm group and antibody status. (DAT will be included)

Further transfusions

In the case of a mild or moderate transfusion reaction being suspected further transfusions can be commenced before the Transfusion Laboratory investigation has been carried out, but the ward staff must have discussed the patient's condition with the patient's doctor, & if appropriate, the on-call Haematologist.
If a severe transfusion reaction is suspected further transfusions can only occur after approval by a Consultant Haematologist or their Registrar.

Reporting transfusion reactions

Clinical staff must report all transfusions that are discontinued due to the severity of the reaction or any patient that dies during or just after a transfusion to the Transfusion Laboratory and transfusion practitioners using EPR or paper reaction form.
Details of the Reaction should be recorded on the EPR system

Transfusion Practitioner role

- Review patient
- Discuss with Consultant Haematologist if appropriate
- Ensure Incident reporting form completed
- Report moderate & severe reactions to SHOT & SABRE
- Report any cases of suspected Transfusion Associated Graft vs Host Disease, TRALI, bacterial contamination, or where severe neutropenia or thrombocytopenia is associated with an ATR, to NHSBT immediately, as associated components from the implicated donation must be removed from the blood supply to NHS Blood Transfusion

Advice

Further advice should be sought from the Haematologist on-call or the

- Transfusion Practitioner (TP) team (office hours only): ext:6178
- Transfusion Laboratory: ASPH ext:3036, after 5 pm bleep 5070

Clinical Management of Acute Transfusion Reaction Tool

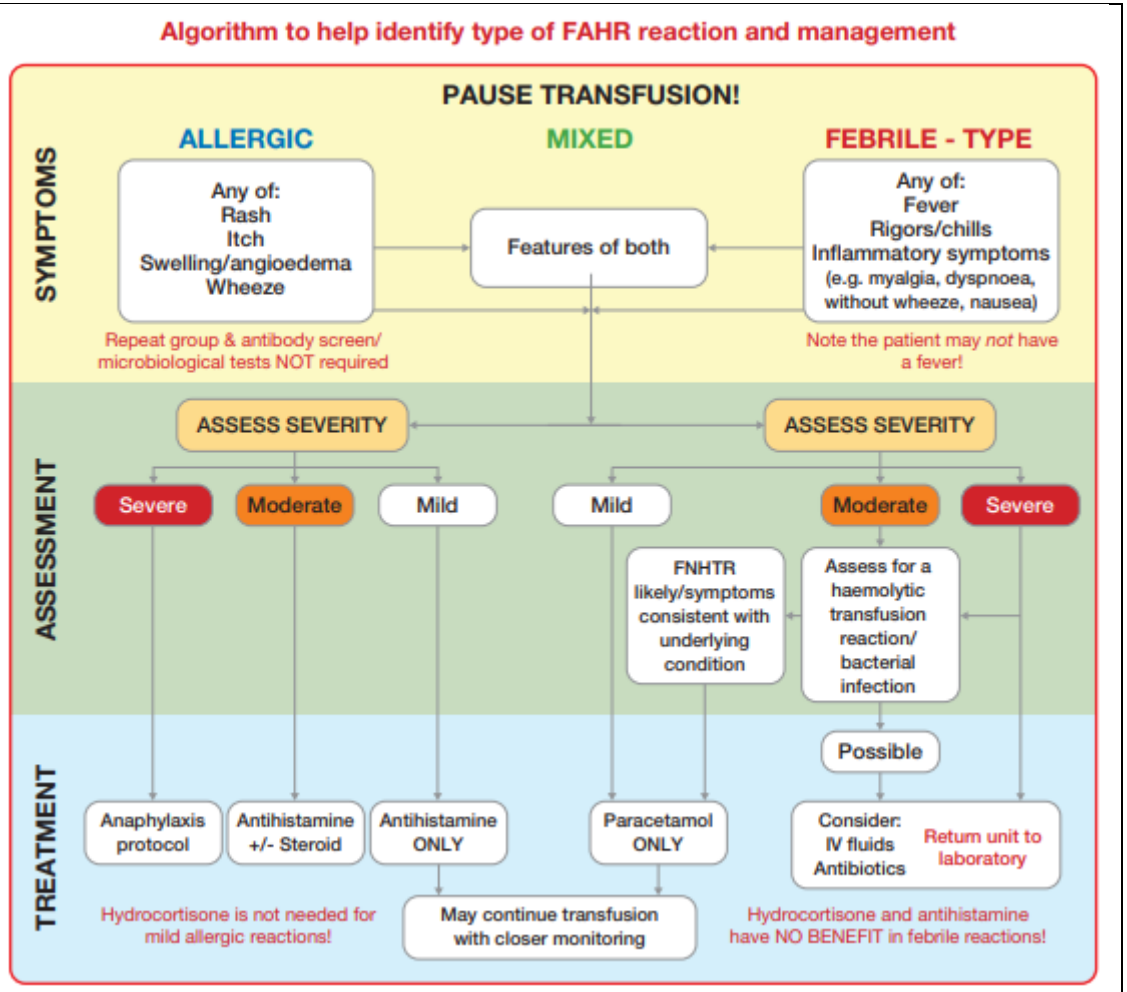
Symptoms /Signs	Mild	Moderate	Severe
Temperature	Temperature of ≥38°C **AND** rise of 1-2°C from baseline temperature	Temperature of ≥39°C **OR** a rise of ≥2°C from baseline temperature	Sustained febrile symptoms or any new, unexplained pyrexia ***in addition*** to clinical signs
Rigors/shaking	None	Mild chills	Obvious shaking/rigors
Pulse	Minimal or no change from baseline	Rise in heart rate from baseline of 10 bpm or more NOT associated with bleeding	Rise in heart rate from baseline of 20 bpm or more NOT associated with bleeding
Respirations	Minimal or no change from baseline	Rise in respiratory rate from baseline of 10 or more	Rise in respiratory rate from baseline of 10 or more accompanied by dyspnoea/wheeze
Blood Pressure (Hypo/hypertension)	Minor or no change to systolic or diastolic pressure	Change in systolic or diastolic pressure of ≥30 mm/Hg NOT associated with bleeding	Change in systolic or diastolic pressure of ≥30 mm/Hg NOT associated with bleeding
Skin	No change	Facial flushing, rash Urticaria, pruritis	Rash, urticaria ***and*** Peri-orbital oedema Conjunctivitis
Pain	None	General discomfort or myalgia Pain at drip site	Acute pain in chest, abdomen, back
Urine	Clear Normal output		Haematuria / haemoglobinuria Oliguria, Anuria
Bleeding	No new bleeding		Uncontrolled oozing
Nausea	None		Nausea or vomiting
All Yellow	**STOP the transfusion but leave connected.** Re-check identity of the unit with the patient, inform doctor. If all well, continue at reduced rate **for the next 30 minutes and then** resume at prescribed rate. Continue to monitor the patient carefully and be alert for other symptoms or signs of a transfusion reaction. Anti-pyretics may be required.		
1 or more Amber	**STOP the transfusion but leave connected**, request urgent clinical review, re-check identity of the unit with the patient, give IV fluids. If symptoms stable or improving over next 15 minutes consider restarting the unit. Antihistamines and/or anti-pyretics may be required.		
1 or more Red	**STOP the transfusion disconnect and return implicated units,** request immediate clinical review, re- check identity of the unit with the patient, give IV fluids, inform the transfusion laboratory, contact the Consultant		

Reaction Type	Details	Signs and symptoms	Actions
Acute haemolytic transfusion reaction	Caused by Transfusion of incorrect Blood. Within 24 hours of transfusion. Most commonly within first 30 minutes	• Pyrexia • Tachycardia • Hyper/Hypotension • Shortness of breath • Respiratory distress • Collapse • Flushing • Chest/ abdo Pain • Bone/ Muscle pain • Urticaria • Rigors • Feeling unwell/acute anxiety	• Take down the transfusion & the giving set • Maintain venous access • Commence 100% oxygen therapy • Resuscitate with crystalloid fluid • Consider inotrope support if hypotension prolonged • Seek urgent critical care & haematology advice, including advice re further transfusions • Inform Transfusion Laboratory & Transfusion Practitioner • Take blood samples as per section D3 • Monitor urine output, patient may need catheterising. Urine output should be maintained at >100mls per hour. • If urine output drops or the patient is oliguric give IV Furosemide. • If the patient has signs of DIC (Disseminated Intravascular Coagulation) then treat with the appropriate blood components. • Urinalysis for haemoglobin
Anaphylaxis	Rare but life-threatening complication usually occurring in the early part of a transfusion. More common with platelets and plasma	• Bronchospasm • Angioedema • Abdominal Pain • Hypotension • Chest/abdo pain • Nausea/Vomiting • Erythema • Urticaria • Conjunctivitis	• Take down the transfusion & the giving set • Maintain venous access by giving saline infusion • Take blood samples as per D3. • Inform Laboratory & Transfusion Practitioner & Haematologist • Return the unit in progress (with giving set attached) & any other units • Follow anaphylaxis protocols

Bacterial Contamination	Contaminated blood components	• Pyrexia • Collapse • Hyper/Hypotension • Tachycardia • Rigors • Flushing • Shortness of breath • Feeling unwell / acute anxiety • Respiratory distress	• Take down the transfusion & the giving set • Maintain venous access • Commence 100% oxygen therapy • Resuscitate with crystalloid fluid • Consider inotrope support if hypotension prolonged • Seek urgent critical care, microbiology & haematology advice • In absence of expert microbiology advice it is generally appropriate to follow the local protocol for antibiotic management of sepsis in neutropenic patients. • Take blood samples as per section D.3 • In addition take blood cultures, U&E's, liver function tests & coagulation screen • Inform Transfusion Laboratory & Transfusion Practitioner
Transfusion related acute lung injury	typically occurs within six hours of a transfusion, whereby the patient develops breathlessness & a non-productive cough. Caused by white cell antibodies in component. Most commonly seen in plasma rich components	• Acute dyspnoea • Acute hypotension During or within 6 hours of transfusion, usually within 2 hours	• Take down the transfusion & the giving set • Seek urgent haematological & critical care advice • Inform Transfusion Laboratory & Transfusion Practitioner • Take blood samples as per D.3 • Monitor blood gases • Chest X-Ray • Measure CVP / Pulmonary capillary pressure • Maintain venous access • Give 100% oxygen therapy • Give IV Frusemide 40 – 80 mg • If CVP is normal & there is chest x-ray "whiteout" • Maintain venous access • Give 100% oxygen therapy • Treat as Adult Respiratory Distress Syndrome (ARDS). • The patient may require ventilatory support

Transfusion associated circulatory overload	occurs when too much fluid (red cells or other components) is transfused or the transfusion is too rapid Risk factors: • Cardiac failure • Renal impairment, • Hypoalbuminaemia • Fluid overload • Low body weight	Any 4 of the following occurring within 12 hours of transfusion: • Acute respiratory distress • Tachycardia • Increased blood pressure • Acute or worsening pulmonary oedema • Evidence of positive fluid balance	The transfusion should be stopped & standard medical treatment including diuretic & oxygen given. Inform Transfusion Laboratory & Transfusion Practitioner
Transfusion associated graft verses host disease	If patients who need irradiated blood components receive non-irradiated blood components they are at risk of developing TAGvHD.	fever, maculopapular skin rash, diarrhoea & hepatitis occurring 1–2 weeks after transfusion. Bone marrow involvement produces severe hypoplasia with profound pancytopenia. Mortality rates are in excess of 90%.	The transfusion should be stopped & urgent advice requested from the Consultant Haematologist. Inform Transfusion Laboratory & Transfusion Practitioner
Post transfusion Purpura	PTP is an adverse reaction to a blood or platelet transfusion that occurs when the body produces alloantibodies to the introduced platelet antigens. These alloantibodies destroy the patient's platelets leading to thrombocytopenia	Rapid decline in platelet count. usually presents 5–12 days after transfusion, & is a potentially fatal condition.	The transfusion should be stopped & urgent advice should be requested from the Consultant Haematologist. Inform Transfusion Laboratory & Transfusion Practitioner

Delayed Haemolytic Transfusion Reaction (DHTR)	Fever and signs of haemolysis	• A fall in Hb or failure of increment • Rise in bilirubin • Positive DAT • Positive cross match not detectable pre-transfusion	• Take blood samples as per D3 • In addition take samples for U&E's & LDH • Urinalysis for haemoglobin • Renal function should be closely monitored

Febrile, allergic and hypotensive Reactions (FAHR)	The reactions assessed are isolated febrile-type (not associated with other specific reaction categories), allergic and hypotensive reactions occurring up to 24 hours following a transfusion of blood or components, for which no other obvious cause is evident	**Febrile**- A rise in temperature of 2°C or more, and/or rigors, chills, or fever 39°C or over, or other inflammatory symptoms/signs such as myalgia or nausea which precipitate stopping the transfusion, prompt medical review AND/OR directly results in, or prolongs hospital stay **Mild to moderate allergic reaction**- Wheeze or angioedema with or without flushing/urticaria/ rash but without respiratory compromise or hypotension **Reaction with both allergic and febrile features** **Hypotensive Reaction** -Isolated fall in systolic blood pressure of 30 mm Hg or more occurring during or within one hour of completing transfusion and a systolic blood pressure 80 mm or less in the absence of	

		allergic or anaphylactic systems. No/ minor intervention required Hypotension, as previously defined, leading to shock (e.g., acidaemia, impairment	

APPENDIX 9: TRANSFERRING A PATIENT HAVING A TRANSFUSION OR WHO MAY NEED BLOOD IN TRANSIT (External Transfer)

Patients should only be transferred whilst having a blood transfusion (internally or externally) if it is essential.

- These patients must be escorted by a transfusion competent, registered professional (Nurse/Midwife/Doctor) at all times.

- If blood is to be transferred with the patient, it must be transported in a transfusion accredited transport box (*see section 5.8*). If a transport box is required ask Transfusion Laboratory for this in advance of the transfer time. Transport boxes keep blood at the correct temperature if they remain sealed. The length of time the box is validated for will be documented on the outside of the box.

The same principles of checking, documentation of removal, and time frames that apply to a blood fridge for collection, return and administration of blood also apply to a transport box once opened.

- Transfusion of transferred units must be completed before the patient's ID band (applied at the originating hospital) is removed.

- The hospital receiving the patient and blood components must satisfy itself via its own procedures that the blood is safe to transfuse to that patient. The use of the NHS number on all documentation and ID bands should enable the safe transfer of blood between Trusts.

- Patients transferred into the hospital with blood components issued by another transfusion laboratory must have their details checked using the NHS number as the unique identifier. New samples must be obtained as soon as possible.

- The decision to use the blood lies with Consultant or Registrar present.
- If blood components are not transfused in transit to an acutely unwell patient the sealed transport box must be sent to the receiving hospital's Transfusion Laboratory immediately to prevent wastage.

APPENDIX 10: TRANEXAMIC ACID

1.0 Tranexamic Acid (TA)

Tranexamic Acid is an anti-fibrinolytic agent that has been used for many years in bleeding patients as well as for bleeding prevention. Only recently has more evidence become available leading to the need for a guideline for use for overall & for specific indications.

The Clinical Randomization of Anti-fibrinolytic in Significant Haemorrhage (CRASH-2) study was a randomized controlled trial (RCT) of TA versus placebo in the management of those with or at risk of significant bleeding after trauma, & recruited 20,000 patients worldwide [CRASH-2 collaborators, 2010]. The primary outcome was death in hospital within four weeks of injury. Death in the first four weeks was reduced by 9% with TA: deaths due to bleeding were reduced by a third when TA was given in the first three hours. TA has no adverse events nor does its use lead to an increase in thrombotic events.

The greatest benefit of the use of TA was seen the earlier that TA was given after injury & that there was a possibility of harm if given >3 h after injury [CRASH-2 collaborators, 2011].

CRASH-2 showed no reduction in the use of blood components in those treated with TA. A retrospective study of the use of TA in a military trauma suggests this is due to the higher survival rate with TA (23.9% vs. 17.9%) (Morrison et al, 2012), because the additional surviving patients will require further blood components.

The results of the CRASH-2 trial applied only to patients with trauma. Patients with other causes of bleeding, such as gastrointestinal (GI) bleeding, are usually older than trauma patients, with different co-morbidities; it is unclear whether the results of CRASH-2 should be extrapolated from trauma to GI bleeding. Specific indications are discussed below.

A systematic review (Ker et al, 2012) regarding the use of TA in surgical patients, found 129 trials, totalling 10,488 patients, carried out between 1972 & 2011. In this meta-analysis, TA reduced the probability of receiving a blood transfusion by a third (risk ratio 0.62, 95% confidence interval 0.58 to 0.65; P<0.001). A newly published analysis of the use of TA in hip & knee replacement in the USA has suggested that there is no increased risk of vascular occlusive events in this group of patients (Memtsoudis, 2014).

Aprotinin, a bovine protein with multiple effects including an antifibrinolytic action, has been used in the past in bleeding patients, but cannot be recommended any more due to concerns about its safety (Hutton et al, 2012).

Summary

- Adult trauma patients with, or at risk of, major haemorrhage, in whom antifibrinolytics are not contraindicated, should be given tranexamic acid as soon as possible after injury, at a dose of 1 g intravenously over 10 min followed by a maintenance infusion of 1 g over 8 h (1A). TA can continue to be given at a dose of 1g QDS (oral/IV) until haemostasis is obtained.
- The use of tranexamic acid should be considered in non-traumatic major bleeding (1B).
- A dose of TA of 1g QDS can be continued for 48-72 hours post-bleeding episode.

Appendix 10
2.0 Specific Indications

2.1 Obstetric haemorrhage
Early use of tranexamic acid seems to be beneficial in major obstetric haemorrhage.
The WOMAN study (Shakur *et al* 2017) was a large, multi-national, double-blind placebo-controlled trial of tranexamic acid for patients with post-partum haemorrhage. 1g of tranexamic acid (or placebo) was given upon diagnosis of post-partum haemorrhage, with the option of a second dose if bleeding continued after 30 minutes. Death from bleeding was significantly reduced in women given tranexamic acid (1·5% vs 1·9%, RR 0·81, 95% CI 0·65–1·00; p=0·045). The effect was especially marked where tranexamic was given within 3 hours, highlighting the importance of early administration (1·2% vs 1·7%, RR 0·69, 95% CI 0·52–0·91; p=0·008). There was no difference in blood product usage or hysterectomy between the groups. Adverse events (including thromboembolic events) did not differ significantly in the tranexamic acid versus placebo group.

2.2 Gastro-intestinal (GI) haemorrhage
Current evidence suggests that tranexamic acid may not be beneficial in GI haemorrhage. The HALT-IT trial (Roberts *et al* 2020) was a large, multi-national, double-blind placebo-controlled trial of tranexamic acid for patients with upper or lower GI haemorrhage. A relatively large dose of tranexamic acid was given: 1g immediately, followed by 3g over the next 24 hours. No difference was observed in deaths from bleeding or blood product usage between patients randomised to tranexamic acid and those who received placebo. A significant increase in venous thromboembolism and seizures was seen in the tranexamic acid arm. The investigators concluded that tranexamic acid should not be used for the treatment of gastrointestinal bleeding outside the context of a randomised trial.

2.3 Trauma
Adult trauma patients with, or at risk of major haemorrhage, should be given tranexamic acid as soon as possible after injury, at a dose of 1 g intravenously over 10 min followed by a maintenance infusion of 1 g over 8 h (1A).

The utility of antifibrinolytics is clear & subsequent data to CRASH-2 confirms that trauma does indeed induce massive fibrinolytic activation, with the extent relating to the degree of injury (Raza et al, 2013). NHS England has ensured TA is available to all paramedics at the roadside. For those patients who do not receive TA pre-admission, there should be no delay in its administration once admitted to hospital. We do not recommend waiting to test for "TEG hyperfibrinolysis" if available, because thromboelastographic is an insensitive measure of fibrinolytic activation (Raza et al, 2013).

2.4 High-risk patient groups such as cardiac & spinal surgery
In high-risk surgery tranexamic acid at a dose of 10 mg/kg followed by 1 mg/kg/h is recommended to prevent bleeding (1B).

Strong evidence that TA reduces blood transfusion in surgery has been available for many years (Ker et al, 2012; Henry et al, 2011. The Horrow regime of 10 mg/kg followed by 1 mg/kg/h (Horrow et al 1995), originally devised for use in patients undergoing

cardiopulmonary bypass, is the usual regime. Higher doses have no increase in haemostatic effect (Kerr et al 2012), & are associated with seizures (Kalavrouzios et al, 2012).

2.5 Surgical Patients

NICE (NG 24 2015)
Offer tranexamic acid to adults undergoing surgery who are expected to have at least moderate blood loss (greater than 500 ml).
Results from the recent POISE-3 clinical trial confirm the quality, safety and cost-effectiveness of using tranexamic acid in moderate surgery, where more than 500ml of blood loss is anticipated. This evidence further supports the NICE quality statement on blood transfusion and complements the recent Centre for Perioperative Care guideline 'Anaemia in the Perioperative Pathway'.

Increasing the use of tranexamic acid in this way may reduce the risk of cancelling elective surgery due to limited availability of blood stocks.

The Joint Royal Colleges Tranexamic acid in Surgery Implementation Group recommends that tranexamic acid should be considered in all adults having in-patient surgery.[2]

1 gram of TXA should be given by slow intravenous injection at the start and end of surgery. [1] The first dose should be given just prior to skin incision and the last dose given just after skin closure.

TXA is eliminated by renal excretion and there is a risk of accumulation with repeated dosing in patients with renal impairment. However, there would not be a risk of accumulation when giving a single 1g dose just prior to surgery.

Do not routinely use cell salvage without tranexamic acid.

2.6 Paediatrics
See Blood Transfusion Policy Neonatal & Paediatric Patients.

2.7 Haemophilia patients
Patients with Haemophilia (A/B) & von Willebrand Disease (VWD) can benefit from an antifibrinolytic agent. TA is recommended as prophylaxis pre-procedures (to start 24-48 pre-procedure) as well as when presenting with emergencies. The dose is similar as above at 1 g QDS (oral/IV).

APPENDIX 11: ABBREVIATIONS

ABC	Airway, Breathing, Circulation
A+E	Accident & Emergency
AHTR	Acute Haemolytic Transfusion Reaction
AIDS	Acquired Immune-Deficiency Syndrome
A-P	Anterior – Posterior
APPT	Activated Partial Thromboplastin Time
ARDS	Adult Respiratory Distress Syndrome
ASA	American Society of Anaesthesiologists
ASAP	As Soon As Possible
ASPH	Ashford & St Peters NHS Foundation Trust
BB	Blood Bank
BSH	British Society for Haematology
BM	Bone Marrow
BMS	Bio-Medical Scientist
BP	Blood Pressure
BPL	Bio-Products Laboratory Ltd
BSPS	Berkshire & Surrey Pathology Services
BST	Blood Sciences – Transfusion
BSQR	Blood Safety & Quality Regulations
C	Centigrade
CCL	Clinical Communication Lead (Massive haemorrhage)
CKD	Chronic Kidney Disease
CMO	Chief Medical Officer
CNS	Central Nervous System
CMV	Cytomegalovirus
CVP	Central Venous pressure
DAT/DCT	Direct Antiglobulin/Coombes Test
DCH	**Duty Consultant Haematologist:** during routine hours this means the Consultant haematologist with lead responsibility for transfusion; outside routine hours this means the on-call Consultant haematologist.
DDAVP	**Desmovasopressin:** a synthetic hormone used to stimulate the release of clotting factors into the blood, mainly used in von Willebrand's disease & mild haemophilia A.
DIC	**Disseminated Intravascular Coagulation**
EBMG	**Emergency Blood Management Group:** a group composed of the trust's senior executive officers & clinical directors which oversees the formation of the Trust's emergency blood management plan.
ECV	External Cephalic Version
EIA	Equality Impact Assessment
ENT	Ear, Nose & Throat
EPO	Erythropoietin
ERCP	Endoscopic retrograde cholangiopancreatography
FBC	Full Blood Count
FFP	Fresh Frozen Plasma
FMH	Feto-Maternal haemorrhage
FNHTR	Febrile Non-Haemolytic Transfusion Reaction

FPH	Frimley Park Hospital
FHFT	Frimley Health NHS Foundation Trust
G+S	Group & save OR Group & antibody screen
GvHD	Graft versus Host Disease
HAS	Human Albumin Solution
HB	Haemoglobin
HDFN	Haemolytic Disease of the New-born
HIV	Human Immuno-deficiency Virus
HLA	Human Leucocyte Antigen
HPA	Human Platelet Antigen
HR	Heart Rate
HSC	Health Service Circular
HSCT	Haemopoietic Stem Cell Transplant
HTC	Hospital Transfusion Committee
HTR	Haemolytic Transfusion Reaction
ID	Identity Details
ICS	Intraoperative Cell Salvage
ICU/ITU	Intensive Care/Therapy Unit
IgA	Immuno-globulin A
INR	International Normalized Ratio
IM	Intra-Muscular
IV	Intra-Venous
IU	Internal Unit
IUT	Intra-Uterine Transfusion
JVP	Jugular Venous Pressure
JW	Jehovah Witness
KG	Kilogram
LDH	Lactate dehydrogenase
LCL	Laboratory Communication Lead
LIMS	Laboratory Information Management System
LMWH	Low molecular Weight Heparin
LP	Lumbar Puncture
LSCS	Lower Segment Caesarean Section
LVF	Left ventricular Failure
MAU	Medical Assessment Unit
MAX FAC	Maxilla-Facial
MBFFP	Methylene Blue Fresh Frozen Plasma
MCH	Mean Corpuscular/Cell Haemoglobin
MCV	Mean Corpuscular/Cell volume
MDS	Myelodysplastic Syndrome
MHRA	Medicines & Healthcare products Regulatory Agency
ML	Millilitre
MLA	Medical Laboratory Assistant
MSBOS	Maximum Surgical Blood Ordering Schedule
NBS	National Blood Service
NHSBT	National Health Service: Blood Transfusion
NHSLA	National Health Service Litigation Agency
NPSA	National Patient Safety Agency

O^2	Oxygen
ODP	Operating Department Practitioner
ORIF	Open Reduction, Internal Fixation
PBMT	Joint SPS Patient Blood Management Team
PBMC	Patient Blood Management Committee
PCC	Prothrombin Complex Concentrate
PICC	Peripherally Inserted Central Catheter
POAC	Pre-Operative Assessment Clinic
PSM	Platelet Suspension Medium
PT	Prothrombin Time
PTP	Post-transfusion purpura
PV	Per-Vagina
QDS	Four times a day
RAADP	Routine Ante-Natal Anti-D Prophylaxis
RBC	Red Blood Cells
RCC	Red Cell Concentrate
RCOG	Royal College of Obstetricians & Gynaecologists
RR	Respiratory Rate
RSCH	Royal Surrey County Hospital
SABRE	Serious Adverse Blood Related Events
SaBTO	The Advisory Committee on the Safety of Blood, Tissues & Organs
SDFFP	Solvent-detergent Fresh Frozen Plasma
SHO	Senior House Officer
SHOT	Serious Hazards of Transfusion
SNMLC	Senior Nursing & Midwifery Leadership Committee
SOP	Standard Operating Procedure
SPH	St Peters Hospital
SPC	Summary of Product Characteristics
SPN	Safer Practice Notice
SpR	Specialist Registrar
SPS	Surrey Pathology Services
ST1	Senior Trainee year 1
TACO	Transfusion Associated Circulatory Overload
TAGvHD	Transfusion Associated Graft versus Host Disease
THR	Total Hip Replacement
TKR	Total Knee Replacement
TCRE	Transcervical Resection of The Endometrium
TP	Transfusion Practitioner
TPR	Temperature, Pulse, Respiratory Rate
TRALI	Transfusion Related Acute Lung Injury
TTP	Thrombotic Thrombocytopenic Purpura
U+E	Urea & Electrolytes
UFH	Unfractionated Heparin
UK	United Kingdom
WHO	World Health Organisation
XM	Cross match blood test