Blood Transfusion Policy

Department / Service:	Blood Transfusion, Pathology.
Originator:	Lead Transfusion Practitioner
Approved by:	Clinical Governance Group, Trust Transfusion Committee
Date of approval:	5th May 2023
Review date: This is the most up to date document and should be used until a revised version is in place:	5th May 2026
Target Organisation(s)	Worcestershire Acute Hospitals NHS Trust Worcestershire Health & Care Trust
Target Departments	All
Target staff categories	All staff involved in the transfusion process

Policy Overview:

The policy details key messages relating to all stages of the transfusion process.

NHS Trusts must provide patients with accessible, authoritative and comprehensive information about transfusion therapy and its intended benefits, risks and any available transfusion alternatives. All patients must give informed verbal consent to transfusion where possible.

The prescription of blood and blood components must be based on a full clinical evaluation of the patient and follow recognised national guidelines.

Safe transfusion phlebotomy practise involves following the Positive Patient Identification procedure and hand labelling samples at the patient's side.

The collection of blood components and products must only be done by staff that are competency assessed in this process. This is to ensure they understand the correct checking procedures and transport options available.

The administration of the blood components is a critical step. Positive Patient Identification is essential to ensure the correct patient receives the correct blood and/or blood component. The patient must be monitored appropriately to ensure they do not come to harm as a result of the transfusion.

The trust has a legal responsibility to document the final fate (destination) of each unit of blood components we receive, it is essential that the transfusion is documented correctly in the patient records (Blood Safety & Quality Regulations 2005).

Key amendments to this policy

Date	Amendment	Approved by:
June 2018	Clinical director changed. No longer approved by CEC, now safe patient group. New terms of reference. Amalgamation of the paediatric policy into the adult policy. The addition of the criterion for specialist nurses authorising blood components. Updated national indication codes and criterion for special requirements	Gill Godding/Safe patient Group
July 2020	Document extended for 6 months whilst review and approval process takes place	Gill Godding
February 2021	Document extended for 6 months as per Trust agreement 11/02/2021	Trust agreement
September 2021	Clinical director amended. No longer approved by Safe Patient Group, now Clinical Governance Group. Updated national indication codes and criterion for special requirements. Updated Sample validity periods. Change in practice for the identification of unknown patients in A&E. Updated National indication codes for transfusion	Clinical Governance Group
May 2023	Document re-approved for 3 years	Clinical Governance Group/ TTC

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1. Introduction

This policy pathway aims to promote and support safe and effective transfusion practice in Worcestershire Acute Hospitals NHS Trust and Worcestershire Health & Care Trust, thereby provide our patients with timely and appropriate transfusion therapy while minimising their exposure to the potential hazards.

2. Scope of this document

This policy pathway covers all aspects of the transfusion process. The procedures which support the policy are covered in the appendices.

This policy pathway applies to all patients including children and young people (excluding neonates*) receiving transfusion irrespective of their location and applies to all healthcare professionals involved in the transfusion process.

There are additional guidelines for certain situations and patient subgroups which apply in addition to this policy but not instead of it.

- Major Haemorrhage Protocol
- Procedure for Blood Collection and transfer to satellite fridges
- Procedure for the administration of blood components and management of transfusion reactions
- Procedure for sample collection and blood transfusion requests
- Management of patient who refuse blood transfusion
- Blood Transfusion on the Neonatal Unit (WAHT-PAE-015)
- Policy for Emergency Management for Red Cell and Platelet Shortages
- Policy for the management of Anaemia
- Clinical guideline for the use of intravenous iron

* Neonate = up to 28 days after due date

3. Definitions

Definitions are given throughout the text.

4. Responsibility and Duties

The Trust Board

The Trust Board is ultimately responsible for ensuring that the Trust has effective Policies, Procedures and arrangements in place to manage Transfusion issues.

The Clinical Governance

The Clinical Governance Group (CGG) will receive quarterly reports from the Trust Transfusion Committee (TTC) on the effectiveness of transfusion provision, and on associated risks. The CGG will consider the risks raised, and will manage or escalate them in accordance with the arrangements set out in the Risk Management Strategy.

The CGG is responsible for overseeing the implementation of the Trust's Transfusion policies, procedures and processes.

The Trust Transfusion Committee (TTC) (Terms of Reference):

This Committee will act as an expert forum of the Clinical Governance Group and has been established to ensure safe and appropriate transfusion practice within the organisation.

The TTC duties are:

- To promote and monitor Patient Blood Management (PBM) including blood conservation strategies (pre-operative assessment, cell salvage and point of care testing).
- Ensure compliance with the trust transfusion policies through annual audit of the treatment care pathway.
- Lead multi-professional local and national audit of the use of blood, blood components and blood products within the Trust. Act upon the audit findings by creating action plans which are monitored through to completion.
- Provide feedback on audit of transfusion practice and the use of blood to all Trust staff involved in blood transfusion
- Review and develop the practice of blood transfusion against national guidelines, focusing on critical points for patient safety and the appropriate use of blood. Modify and improve blood transfusion protocols and clinical practice based on new guidance and evidence.
- Develop and implement a robust strategy for the education and training for all staff involved in blood transfusion, ensuring staff are competent to carry out their role.
- Promote patient education and information on blood transfusion including the risks of transfusion, blood avoidance strategies and the need to be correctly identified at all stages in the transfusion process. Consult with local patient representative groups where appropriate.
- Develop contingency plans in case of blood shortages.
- Ensure compliance with Blood Safety and Quality Regulations 2005.
- Ensure 100% compliance with full vein to vein Traceability of all blood components in accordance with BSQR 2005
- Produce a quarterly Transfusion Report for Clinical Governance group on the effectiveness of the Trust's Transfusion provision (and control of the risks associated with it).
- Support the Hospital Transfusion Team and Clinical Directorates in the implementation of Trust Transfusion-related policies, procedures and PBM recommendations.
- Promote collaboration and communication between all staff involved in blood transfusion activities.
- Comply with MHRA inspection and reports
- Monitor blood usage and wastage within the trust and benchmark against other trusts usage and wastage

Membership of the TTC

The following members provide user interaction and clinical feedback, as well as disseminating information and changes to clinical colleagues:

- Consultant Haematologist Lead for Transfusion
- Blood Bank Manager
- Lead Transfusion Practitioner
- Consultant physician - Urgent care division
- Consultant physician - Speciality medicine division
- Consultant physician – Women's and children's division
- Consultant Paediatrician – Women's and Children's division
- Consultant anaesthetist – Specialist clinical services division
- Consultant surgeon – Surgery division
- Clinical Governance representative
- Worcester Health and care trust (HACW) representative
- NHSBT representative
- Corporate team – Deputy chief Nursing officer

In attendance:
The Forum may request the attendance of members of staff to assist it in meeting its terms of reference.

Trust Transfusion Team
The Trust Transfusion Team (TTT) is a subgroup of the TTC. The membership consists of: ~~the~~

- Lead Haematology Consultant for Transfusion
- Blood Bank Manager
- Lead Transfusion Practitioner
- Associate Transfusion Practitioner(s)
- Senior Bio-medical Scientists
- Other members of the TTC and interested parties are encouraged to attend.

The main duties of the TTT are to:

- Implement objectives set by the TTC
- Promote patient blood management and the safe and appropriate use of blood
- Promote patient education & awareness
- Actively promote the use of transfusion alternatives
- Provide and monitor training programmes for all staff involved in transfusion
- Review and implement recommendations by Serious Hazards Of Transfusion (SHOT) and other professional groups, providing feedback to TTC
- Monitoring adverse events / incidents and acting on review findings
- Develop and review policies, procedures and protocols based on national guidelines
- Audit compliance with transfusion policy, publish findings, feedback to affected areas and ensure corrective action
- Meet monthly and report to the quarterly Transfusion Committee meetings

All Staff involved in the transfusion process must

- Maintain competency and undertake Continuing Professional Development (CPD) relevant to their role in transfusion.

- Comply with the requirements of this policy including positive patient identification as detailed in policy to identify all patients WAHT-CG-019.

- Report all incidents regarding transfusion practise according to the Trust Incident Reporting Policy WAHT-CG-008.

- Take part in audits of transfusion practise as required

Medical / Prescribing Staff
The prescription of blood (including autologous blood) and blood components is the responsibility of a medical doctor or clinical nurse specialists who have successfully completed the Non-Medical Authorisation of Blood Components course.

It is the duty of the person making the decision to prescribe blood components or products to consider the potential risks and intended benefits of the transfusion for the individual patient.

The prescriber has a duty to ensure the patient receives information about the risks, benefits and alternatives to transfusion therapy.
They must gain informed consent from the patient prior to them receiving a transfusion and this should be documented on the documentation for transfusion. This standard of consent is expected in all but the most urgent situations (please refer to the Trust's consent to examination or treatment policy WAHT-CG-075.

For long term repeated transfusions (usually haematology patients) the e-consent system under Haematology should be used to obtain written consent. This comes with a trust information leaflet about the risks of long term transfusion. This consent needs only to be signed once at the start of the regular transfusions.

Patients who received transfusion without knowing it must be informed retrospectively. This is to prevent them from donating blood in the future.

The prescriber must clearly indicate the reason for transfusion on the request form and check the patient notes to ensure any special requirements are identified.
The prescription for transfusion should be written on the Documentation for transfusion of blood components. WR2151.
The indications for use of irradiated and CMV negative blood components are given in appendix 2.

It is a medical responsibility to ensure documentation of the transfusion episode is in the clinical notes. The indication for transfusion is documented in the Documentation for transfusion of blood components. The efficacy of each unit given should be monitored within the medical notes.

Medical Staff and Registered Nursing Staff, Midwives, Operating Department Practitioners and Qualified/Registered Nursing Associates:
Actions and responsibilities providing that staff have been ***trained & competency assessed*** to do so:

- Explain the intended benefits, risks and any suitable alternative to transfusion therapy to the patient (patient information leaflets are available in all clinical areas and also obtainable from the transfusion practitioners or downloadable from the intranet site - A to Z - Blood Transfusion Site).

- Request blood components and products from blood bank, clearly indicating the reason for request and ensure any special requirements required are ordered on the request (this is the responsibility of the requestor, see appendix 4)

- Take blood samples for cross-match.
- Collection of blood components and products
- The administration of blood components to patients following prescription.
- Monitoring patients during transfusion.
- Taking appropriate action in the event of adverse effects.
- Reporting transfusion reactions or other clinical incidents related to transfusion according to the Trust Incident Reporting Policy.

Phlebotomists, Health Care Assistants, Nursing Auxiliaries, Trainee Nursing Associates
Responsibilities are restricted to the taking of blood samples for cross-matching when trained and competency assessed to do so. Please refer to the procedure for sample taking for transfusion.

Non-Registered Staff including Porters, Ward Receptionists, Health Care Assistants, ~~and~~ Nursing Auxiliaries and Trainee Nursing Associates

Responsibilities are restricted to the collection of blood components and products on completion of training and competency assessment.

Laboratory Staff
Responsibilities for non–state-registered staff are restricted to general clerical and supportive duties.

State-registered staff working in the transfusion laboratory, has responsibility for:

- Maintenance of sufficient and suitable stock
- Selection, testing and issue of suitable blood, blood components and blood products requested by medical staff
- Ensuring correct storage conditions for blood, components and products are maintained
- Monitoring cold-chain and traceability
- Investigation and monitoring of adverse reactions and events associated with blood transfusion and reporting incidents appropriately to the Trust and external bodies
- Co-ordinating, planning and reporting of relevant audits
- Review the appropriateness of the request for blood components/ products and ask for clarification if not deemed suitable.
- Refer staff to the haematology clinical staff for advice when appropriate.
- Report any incidents related to transfusion according to the Trust Incident Reporting Policy and Procedures.

Ward/Departmental Managers
Ward/Departmental Managers are responsible for:

- Ensuring that all of their staff members involved in the transfusion process have received training, and are assessed as competent in all aspects of blood administration relevant to their role.
- Ensure the ward area has trained NPSA SPN 14 competency assessors with time available for staff assessments as and when required.
- Ensuring incidents are reported as per Trust Incident Reporting policy.
- Ensuring prompt return of Transfusion Record Sheets to the Transfusion Department to meet 100% traceability requirements.

Ensuring compliance with this policy in their area of responsibility.

5. Policy Detail

Transfusion Decisions

The decision to transfuse blood components must balance the need to provide adequate tissue oxygenation or effective haemostasis against the potential risks of transfusion and the appropriate use of blood.

Decisions must be made in accordance with the patient's wishes. Where possible, all patients must give informed verbal consent for transfusion. Consent should be obtained from the parent/guardian if the child is unable to verbally consent.

Please refer to the "Management of patients who refuse blood transfusion" in the Blood Transfusion pathway.

The National Blood Transfusion Committee "Indication Codes for the use of blood components in adults" and the "Transfusion of Blood components for infants and Children" are given in appendix 1. The indication codes and guidance are to assist medical staff in the prescribing of blood components and should be used in conjunction with BSH guidelines.

Decisions must always be based on clinical judgement, according to individual patient need and specific clinical circumstances. All reasonable effort must be made to avoid transfusion where possible i.e. by use of a robust pre-operative anaemia screening programme.

Blood transfusion should not take place between the hours of 22:00 to 08:00, except in clinically urgent/emergency situations.

Routine, non-emergency transfusions should not be based solely on point-of-care testing results (i.e., HemoCue, ABG, etc.). Unless it is an emergency these results should be confirmed by standard laboratory testing before transfusion.

Sample Collection and Blood Transfusion Requests

All requests for blood components or products must be made on a **fully completed** bBlood transfusion request form. NOTE requests for blood components cannot be made electronically however an addressograph label can be attached to the form.

The accompanying blood sample must be fully hand written. The details must correspond to those on the request form; otherwise the sample will be rejected. Patient ID labels must **not** be used on the sample.

Positive Patient Identification
The patient's identification must be checked by asking them to state their name and date for birth (as per Policy for Identifying All Patients WAHT-CG-019). This information must be checked against the patient's identification band and then against the request form immediately before taking the sample. The identification must specify the patient's surname, first name, date of birth, gender and NHS number. Where the patient is not able to partake in this process, the identity must be confirmed with a second member of staff.

In the event of an unknown patient being admitted via accident and emergency, the patient will be supplied with unique A&E patient demographics. As per the Patient safety alert 2018 - *Safer temporary identification criteria for unknown or unidentified patients* NHS/PSA/RE/2018/008.
For **names**, a randomly selected first name and surname from the phonetic alphabet is generated. E.g. Foxtrot Whisky.
For **temporary numbers**, a unique hospital number is created.
For **DOB**, the 1st January with an estimated year of birth is generated.

It is essential that the person taking the sample labels the tube at the patient side immediately after venepuncture. NEVER use pre-labelled sample tubes.

In a life-threatening situation Group O Rh Negative blood will be issued until a correctly labelled sample is provided.

Sample validity:

- In patients' who have not been transfused or pregnant in last 3 months, the sample is valid for 7 days.
- Patients who have been transfused or pregnant within the last 3 months, then a sample will still be required within 72 hours.
- Patients with antibodies require samples within 72 hours to allow for manual cross match to be performed

Please refer to the 'Procedure Pathway for Sample Collection and Blood Transfusion Requests' in the Blood Transfusion Treatment Policies

Collection of Blood Components or Products
The collection of the wrong blood has been identified as a major site of "First Error" in UK incidents where patients have been given the wrong blood.

Collection must only be undertaken by staff that have been trained and assessed as competent for this task. The importance of correct identification procedures and of the potential consequences of identification errors must be fully understood by all staff involved in this process.

All staff must be aware of the correct transport methods and the time limits which apply to blood movement. This is to ensure cold chain compliance as required by the Blood Safety and Quality Regulations 2005.

See the "Procedure pathway for Blood collection and transfer to satellite sites" within the Blood Transfusion treatment pathway policies.

Administration of Blood Components

A transfusion care pathway (WR2151 Documentation for Transfusion of Blood Components) must be used for transfusion of all components, the only exception being massive haemorrhage situations and patients IN the operating room - in these cases the transfusion must be recorded on the anaesthetic observation chart.

Blood must only be transfused in recognised clinical areas with available resuscitation facilities. When a patient is transferred between clinical areas they must be accompanied by a registered practitioner who has completed their transfusion training and competency assessment.

Patients must, where possible, be informed in advance of their need for transfusion and its risks and benefits discussed with them. Confirmation of the patient's consent must be recorded on the Documentation for transfusion of Blood Components.
A patient information leaflet should be provided. A parents' guide is available for children requiring transfusion.

For planned transfusion, suitable intravenous (IV) access must be secured **before** collection of blood components or products from blood bank.

All patients receiving transfusions must wear an identification band.
The identification band must specify the patient's surname, first name, date of birth and NHS number.
In circumstances where the patient's name is not known, the identification band must have the patient demographics as explained above for identification of unknown patients.

The primary checker must follow the positive identification of patient's procedure by using the formal bedside checklist in the "Documentation for transfusion of Blood Components". The patient should be asked to state their name and date of birth (where possible) and checking the details on the patient identification band.

The details on the ID band and the compatibility label on the blood component or product must also be identical and confirmed. If there is any discrepancy, return the units to the transfusion laboratory and investigate the reason for this.

The second checker must independently repeat the checking procedure (carried out by the primary checker) before the administration of the transfusion to ensure correct patient identification. It must be done at the patient's side, immediately prior to starting the transfusion.

The care and monitoring of patients during transfusion are described in detail in the "Procedure Pathway for the Administration of Blood Components and Management of Transfusion Reactions".

Post transfusion increment for red cells can be measured after 15 minutes and platelets can be measured after 10 minutes.

Blood Transfusion Reactions and Incidents

Some transfusion-related adverse events may be unavoidable and unpredictable but many are the result of avoidable errors.

All suspected moderate and severe adverse transfusion events or reactions, whether acute or delayed, must be reported to blood bank by telephone. An incident form must also be completed. All acute events must be reported to blood bank immediately.

All transfusion-related incidents, reactions and "near misses" must be reported in line with the Trust Incident Reporting Policy.

Blood bank or transfusion practitioners will report all significant adverse events nationally to Serious Hazards of Transfusion (SHOT) and also to Medicines & Healthcare Regulatory Agency's (MHRA) Serious Adverse Blood Reactions & Events (SABRE), and to the NHS Blood and Transplant (when appropriate).

A flow chart which details how to deal with a suspected transfusion reaction is incorporated into the Documentation for Transfusion of Blood Components (WR2151).
Further information on the recognition, management and follow up of transfusion reactions is given in the "Procedure Pathway for the Administration of Blood Components and Management of Transfusion Reactions"

Management of Massive Blood Loss
Massive blood loss is defined as the loss of 50% of blood volume in 3 hours or blood loss at the rate of ≥150ml/min.

Patients with massive blood loss are not a homogenous group. They present in a range of specialties, and the definitive treatment to arrest the bleeding will depend on the clinical situation.

Priorities for treatment are:

- restoration of circulating volume to maintain tissue perfusion and oxygen delivery
- achieving haemostasis through surgical or other interventional procedures and/or correction of coagulopathy with blood component therapy as indicated

A successful outcome requires prompt action and good communication between various clinical specialties, diagnostic laboratories and Blood Bank staff.

Early involvement of senior clinical staff is essential.

Early consideration should be given to the use of Cell Salvage.

Please refer to the Major Haemorrhage Protocol in the Blood Transfusion Treatment pathway for further information.

Patients Refusing Transfusion
Any adult who has the capacity to consent (Consent to examination or treatment policy WAHT-CG-075) is entitled to accept surgical or other interventions but to specifically exclude certain aspects of clinical management such as a blood transfusion. The patient must be fully informed of (and understand) the potential consequences of the refusal and this must be documented clearly in the patient's notes. Health care professionals must ensure that they continue to provide any other appropriate care to which the patient has consented, and that the patient realises they are free to change their mind and accept transfusion treatment if they later wish to do so.

Please refer to the Management of Patients Who Refuse Blood Transfusion in the Blood Transfusion pathway WAHT-KD-001.

Use of autologous Blood
The use of autologous blood is a recommended and valid alternative to that of homologous or banked blood. Please refer to guidelines on the use of cell salvage.

The use of pre-deposit autologous transfusion (PAD) is not utilised in this Trust.

Cell salvage is a way of collecting a patient's own blood lost during or after surgery. This blood can then be recycled by infusing it back to the same patient. If this process occurs during the operation, it is called intraoperative cell salvage. If the blood is collected after the operation, it is called post-operative cell salvage.

The equipment and process for intraoperative and post-operative cell salvage are different. Patients having a surgical procedure where significant blood loss is expected may be eligible for cell salvage. As a general rule, significant blood loss is about 20 per cent of the patient's total blood volume, which is around one litre of blood loss in adults. The blood collected for cell salvage must be 'clean', which means it is not contaminated (for example with infection, urine and bowel content, or bone chips).

Intra operative cell salvage
The surgeon suctions blood lost during surgery. This blood is collected into a reserve and anticoagulants are added to the blood to stop it from clumping/clotting together. It is also filtered to remove any large particles. The blood then undergoes a process to separate the red cells from other parts of the blood into a bag to be reinfused back to the same patient.

Post-operative cell salvage
After surgery, blood can be collected from the patient and, for a limited time, can be reinfused back to the patient. This technique involves the collection of a patient's post-operative blood loss into a wound drain. It is then returned to the patient via a filter, either washed or unwashed depending on the equipment used.

6. Implementation

6.1 Plan for implementation
This policy will be implemented immediately upon authorisation.

6.2 Dissemination
The policy will be entered onto the Trust Intranet web site. The policy will be discussed at all Induction sessions and during staff training sessions to ensure awareness of the policy.

6.3 Training and awareness
All staff involved in the process of transfusion should be trained bi-annually for the function that they perform.
A training needs analysis for the different staff groups is held with the training and development department.

6.4 Licence to Practice
On completion of training the member of staff has completed their blood transfusion training and competencies they are issued a "licence to practice". The licence is valid for three years (two years for blood collection). The licence number is to be used on all transfusion documentation and on all sample request forms for grouping.

The authoriser of blood components should be a qualified doctor.

Clinical Nurse Specialists are permitted to authorise blood components providing they have attended the "Non-Medical Authorisation of Blood components course".

To attend the course, they are required to have completed the relevant post graduate health assessment course.
Once the course is completed, they are also required to complete and maintain a portfolio of evidence/audit. This portfolio of evidence should be signed off by a Consultant clinical mentor. Once complete the portfolio should be submitted to the Trust Transfusion Committee for final approval. Please see the Non-medical authorisation of blood components procedure WAHT-HAE-038 for more information.

7. Monitoring and compliance

To monitor compliance with the Policy yearly audits will be completed by the Transfusion practitioners. The audit is to ensure that the transfusion process complies with National Patient Safety Agency Safer Practice Notice 14: Right Patient Right blood requirements 2006 and Blood safety and quality regulation 2006 and BSH 2005 Guideline on the Administration of Blood components.

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the Policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	The key parts of the transfusion processes are: • The decision to transfuse • Patient information and consent • Appropriate prescribing of blood • The request for transfusion and sample collection • Collection and delivery of blood components • The administration of blood • Monitoring the patient throughout the process • Completion and documentation of the events • Management of transfusion reactions	An Audit will be completed to establish if the key parts of the process are being followed	yearly	Transfusion practitioners	Trust Transfusion committee	Yearly

8. Policy Review

The policy should be reviewed two yearly by the Transfusion committee.

9. References

Code:

Norfolk, D. (2013) Handbook of Transfusion Medicine: 5th Edition. TSO Sheffield	

10. Background

10.1 Equality requirements

The assessment conducted for this policy reveals no equality issues. The record of the assessment is appended (supporting document 1)

10.2 Financial risk assessment

A financial risk assessment has been performed and appended and reveals that there are no financial implications to this policy. (Supporting document 2)

10.3 Consultation

This policy has been reviewed and circulated to the relevant directorate representatives on the Transfusion Committee for approval.

Contribution List

This key document has been circulated to the following individuals for consultation:

Designation
Consultant Haematologist
Consultant Urgent care
Consultant Specialised medicine
Consultants Women's and Children's
Consultant SCSD
Consultant Surgery
Blood Bank Manager
Community IV team lead
Private Hospital lead
Deputy Chief Nurse
Transfusion practitioner

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee
Trust Transfusion Committee
Clinical Governance Group

10.4 Approval Process

This policy will be approved by the Clinical Governance Group

10.5 Version Control

Key amendments:

Date	Amendment	By:
June 2018	Clinical director changed. No longer approved by CEC, now safe patient group. New terms of reference. Amalgamation of the paediatric policy into the adult policy. The addition of the criterion for specialist nurses authorising blood components. Updated national indication codes and criterion for special requirements	Gill Godding/Patient Safety Group
July 2020	Document extended for 6 months whilst review and approval process takes place	Gill Godding
March 2020	Document extended for 6 months whilst review and approval process takes place	Gill Godding
July 2021	Changes in membership of the Trust Transfusion committee. Changes regarding the identification and management of unknown patients in A&E. Sample validity rule changed from 72 hours to 1 week in most patients. Updated national indication codes for transfusion. Change of version template.	Gill Godding

Appendix 1

Appendix 1: Indication Codes for Transfusion

The indications for transfusion provided below are taken from national guidelines for the use of blood components in adults.

This summary aims to act as a prompt for clinicians to facilitate appropriate use and to enable robust documentation of indications.
Each indication has been assigned a number, to permit reproducible coding, when requesting blood or for documentation purposes. Specific details regarding the patient's diagnosis and any relevant procedures to be undertaken should also be provided at request either on a written request form.

These are current guidelines and may change depending on new evidence. The last evidence review was in January 2020.

Red cell concentrates

Dose - in the absence of active bleeding, use the minimum number of units required to achieve a target Hb. Assume an increment of 10g/l per unit for an average adult.

R1 Acute bleeding

Acute blood loss with haemodynamic instability. After normovolaemia has been achieved/maintained, frequent measurement of Hb (including by near patient testing) should be used to guide the use of red cell transfusion – see suggested thresholds below.

R2 Hb ≤ 70g/L stable patient

Acute anaemia. Consider a Hb threshold of 70g/l and a target Hb of 70-90g/l to guide red cell transfusion. Follow local/specific protocols for indications such as post cardiac surgery, traumatic brain injury, acute cerebral ischaemia.

R3 Hb ≤ 80g/L stable patient and acute coronary syndrome

Use an Hb threshold of 80g/l and a target Hb of 80-100g/l.

R4 Chronic transfusion-dependent anaemia

Transfuse to maintain an Hb which prevents symptoms. Suggest an Hb threshold of 80g/l initially and adjust as required. Haemoglobinopathy patients require individualised Hb thresholds depending on age and diagnosis.

R5 Radiotherapy - maintain Hb > 100g/L

There is some evidence for maintaining an Hb of 100g/l in patients receiving radiotherapy for cervical and possibly other tumours.

R6 Exchange transfusion 2

Fresh frozen plasma

Dose – 15-20 ml/kg body weight, often equivalent to 4 units in adults.

F1 Major haemorrhage

In the trauma setting transfuse empirically in a 1:1 ratio with red cells. Other settings give FFP in at least a 1 unit:2-unit ratio with red cells until results from coagulation monitoring are available. Once bleeding is controlled, further FFP should be guided by abnormalities in PT and APTT (keep PT/APTT ratio of <1.5x mean normal), or by the use of viscoelastic haemostatic assays in a near-patient setting.

F2 PT Ratio / INR > 1.5 with bleeding

Clinically significant bleeding without major haemorrhage. FFP required if coagulopathy. Aim for a PT and APTT ratio of < 1.5, or local protocol range for near-patient viscoelastic assays.

F3 PT Ratio / INR >1.5 and pre-procedure

Prophylactic use when coagulation results are abnormal e.g. disseminated intravascular coagulation and invasive procedure is planned.

F4 Liver disease with PT Ratio/INR > 2 and pre-procedure

FFP not usually required before invasive procedure if PT ratio/INR is <2 and if there is no significant risk of bleeding.

F5 TTP / plasma exchange.

F6 Replacement of single coagulation factor

Prothrombin complex concentrate

PCC1 Emergency reversal of VKA for severe bleeding or head injury with suspected intracerebral haemorrhage.

PCC2 Emergency reversal of VKA pre-emergency surgery

Cryoprecipitate

Dose – 2 pooled units, equivalent to 10 individual units, will increase fibrinogen by approximately 1g/l in an average-sized adult. Cryoprecipitate should be used with FFP wherever there is a requirement for volume, except in the rare setting of isolated deficiency of fibrinogen.

C1 Clinically significant bleeding and fibrinogen <1.5g/L (<2g/L in obstetric bleeding)

C2 Fibrinogen <1g/L and pre-procedure, with a risk of bleeding

C3 Bleeding associated with thrombolytic therapy 3 **C4 Inherited hypofibrinogenaemia - fibrinogen concentrate not available**

Platelet concentrates

Dose – for prophylaxis, do not routinely transfuse more than 1 adult therapeutic dose. Prior to invasive procedure or to treat bleeding, consider the size of the patient, previous increments and the target count.

Prophylactic platelet transfusion

P1 Plt <10 x 10*9/L in reversible bone marrow failure

Not indicated in chronic bone marrow failure if not on intensive treatment, and not bleeding.

P2 Plt 10-20 x 10*9/L with sepsis / haemostatic abnormality, or other additional risk factor for bleeding

Prior to invasive procedure or surgery

P3 to prevent bleeding associated with invasive procedures

To raise the platelet, count above the following thresholds for these procedures:

- **P3a Plt >20 x 10*9/L - central venous line**
- **P3b Plt >40x10*9/L - lumbar puncture/spinal anaesthesia**
- **P3c Plt >50x10*9/L - pre-percutaneous liver biopsy / major surgery**
- **P3d Plt >80x10*9/L - epidural anaesthesia**
- **P3e Plt >100x10*9/L - critical site surgery e.g. CNS / eye**

Transfusion prior to bone marrow biopsy is not required.

Therapeutic use to treat bleeding (WHO bleeding grade 2 or above)

P4a Major haemorrhage - Plt <50 x 10*9/L

P4b Empirically in a Major Haemorrhage Pack / Protocol

P4c Critical site bleeding e.g. CNS - Plt < 100 x 10*9/l

P4d Clinically significant bleeding - Plt < 30 x 10*9/l

Specific clinical conditions

P5a DIC pre-procedure or if bleeding

P5b Immune thrombocytopenia (emergency treatment pre-procedure / severe bleeding)

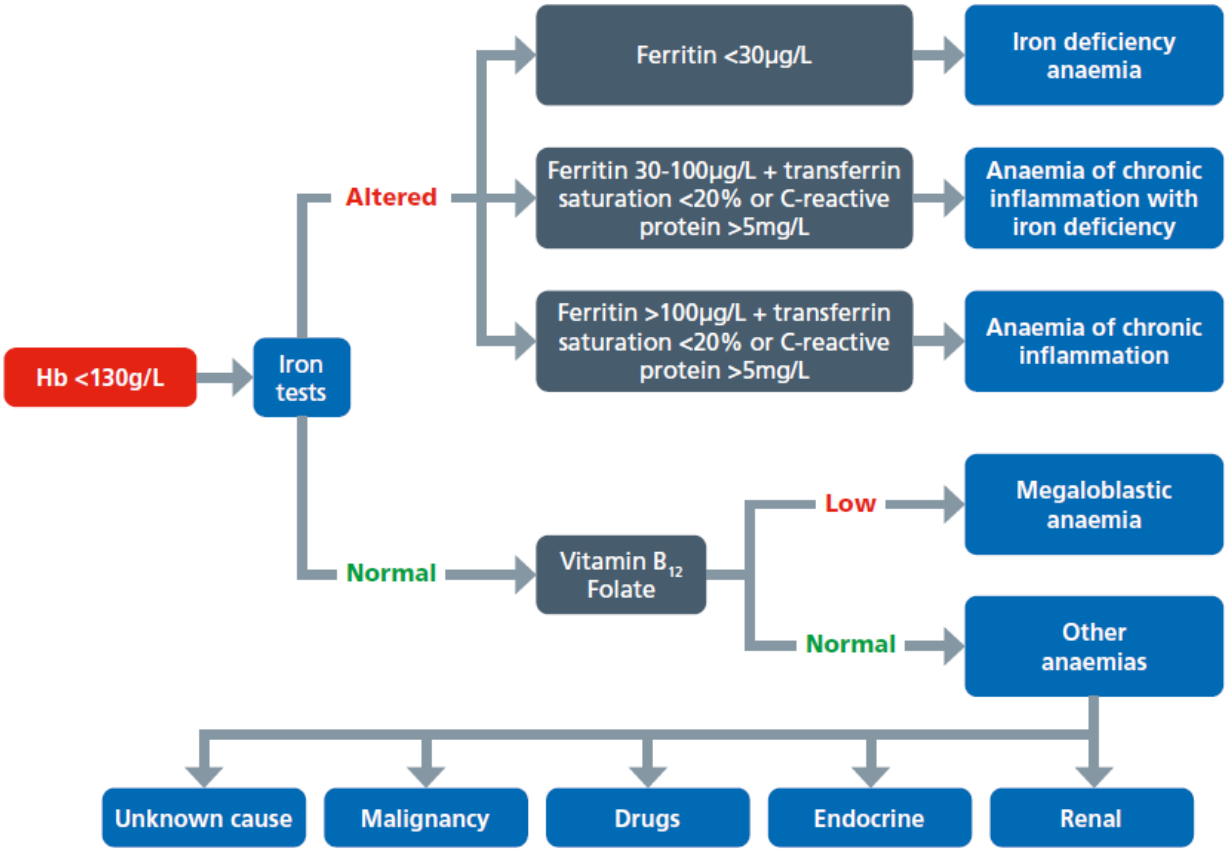
P6. Platelet dysfunction

P6a Consider if critical bleeding on anti-platelet medication

P6b Inherited platelet disorders directed by specialist in haemostasis

Appendix 2

Algorithm for classification of perioperative anaemias[1]



Appendix 3

Transfusion of Blood Components for infants and Children

Red cells

Acute paediatrics

Studies support restrictive transfusion thresholds

- Use Hb threshold of 70 g/L in stable non-cyanotic patients.
- In non-bleeding infants and children, generally aim for a post-transfusion Hb of no more than 20 g/L above the threshold.
- Minimise blood sampling and use near patient testing where possible.

Surgery (non-cardiac)

- Treat pre-op iron deficiency anaemia.
- Use a peri-op Hb threshold of 70 g/L in stable patients without major comorbidity or bleeding
- Consider tranexamic acid in all children undergoing surgery at risk of significant bleeding
- Consider cell salvage in all children at risk of significant bleeding where transfusion may be required

Transfusion volume calculation and prescribing

Volume to transfuse (mL) =

$$\frac{\textit{desired Hb (g/L)} - \textit{actual Hb (g/L)} \times \textit{weight (kg)} \times 4}{10}$$

The formula provides a guide to the likely rise in Hb following transfusion for non-bleeding patients.

- Prescription should be in millilitres not units.
- Normal maximum volume for red cell top-up transfusion is 1 unit.

Transfusion rate: 5 mL/kg/hr (usual max rate 150 mL/hr).

Fresh frozen plasma and cryoprecipitate

Correction of minor acquired abnormalities in non-bleeding patients (excluding DIC)

- FFP should not be administered to non-bleeding children with minor prolongation of the PT/APTT (including prior to surgery unless to critical sites).
- Cryo should not be routinely administered to non-bleeding children with decreased fibrinogen (including pre-op unless fibrinogen <1.0 g/L for surgery at risk of significant bleeding or to critical sites).

Disseminated intravascular coagulation

- FFP may be beneficial in children with DIC who have a significant coagulopathy (PT/APTT >1.5 times midpoint of normal range or fibrinogen

<1.0 g/L) associated with clinically significant bleeding or prior to invasive procedures.

- Cryo may be given if the fibrinogen is <1.0 g/L despite FFP, or in conjunction with FFP for very low or rapidly falling fibrinogen.

Make sure that patients are vitamin K replete.

Typical transfusion volumes: FFP 15-20 mL/kg, cryo 5-10 mL/kg; rate 10-20 mL/kg/hr.

Platelets

- For most stable children, transfuse prophylactic platelets when platelet count <10 x 109/L (excluding ITP, TTP/HUS and HIT where platelets are only transfused for life-threatening bleeding).

Suggested transfusion thresholds for platelets

Platelet count (x 109/L)	Clinical situation to trigger platelet transfusion
<10	Irrespective of signs of haemorrhage (excluding ITP, TTP/HUS, HIT)
<20	Severe mucositis Sepsis Laboratory evidence of DIC in the absence of bleeding* Anticoagulant therapy Risk of bleeding due to a local tumour infiltration Insertion of a non-tunnelled CVL
<40	Prior to lumbar puncture**
<50	Moderate haemorrhage (e.g. gastrointestinal bleeding) including bleeding in association with DIC Surgery, unless minor (except at critical sites)– including tunnelled CVL insertion
<75–100	Major haemorrhage or significant post-operative bleeding (e.g. post cardiac surgery) Surgery at critical sites: CNS including eyes

** Avoid routine coagulation screening without clinical indication;*

*** Prior to lumbar puncture some clinicians will transfuse platelets at higher or lower counts (e.g. 20-50 x 109/L) depending on the clinical situation.*

Typical transfusion volume 10-20 mL/kg (single pack for children ≥15 kg, normal maximum 1 pack); rate 10-20 mL/kg/hr.

Reference:

2016 Guidelines on transfusion for fetuses, neonates and older children.
http://www.b-s-h.org.uk/guidelines/guidelines/transfusion-for-fetuses-neonates-and-older-children

Appendix 4

Indications for Special Requirements and Blood Groups Post Bone Marrow Transplant

Special requirements are required for certain patients, either temporarily or permanently, for one or more types of blood components.

Special requirements refer to HLA matched, CMV negative, Irradiated, Hepatitis E negative or Washed

The requirement must be communicated to the laboratory prior to transfusion, and this requirement recorded in the patient notes.

Once the patient is registered for this requirement this will remain in place indefinitely unless the clinician cancels it.

HLA Matched platelets

HLA matched platelets are indicated for patients that have thrombocytopenia and have demonstrated CCI values consistent with immune refractoriness on at least 2 occasions. All other potential causes must have been excluded and the presence of HLA antibodies confirmed.

The requirement for HLA matched platelets needs to be discussed with the NHS Blood & Transplant consultant and then the blood bank informed.

Immediate (10-60 minutes) and 24-hour post transfusion platelet increments should be measured. If a satisfactory response is seen, HLA matched platelet transfusion should be continued as long as compatible donors are available. It is advisable to repeat the HLA antibody screen at monthly intervals during treatment.

Washed Components

Washed red cells are indicated for patients with recurrent or severe allergic or febrile reactions to red cells, as severely IgA deficient patients with anti-IgA antibodies for whom red cells from an IgA deficient donor are not available. Once washed red cells are only viable for 24 hours.

Washed platelets are re-suspended in Platelet Additive Solution and are indicated for patients with recurrent or severe allergic or febrile reactions to standard platelet transfusions. Once washed platelets are only viable for 24 hours.

CMV Negative Blood Components

Current SaBTO guidance states that CMV negative blood components are now only required for intrauterine transfusions and the transfusion of neonates and pregnant women.

Irradiated Blood Components

These are indicated for patients at risk of transfusion associated graft versus host disease (TA-GvHD) given in the list below. Gamma- or X-irradiation is used to inactivate residual donor lymphocytes in blood components which otherwise have the potential to engraft in patients bone marrow.

Irradiated blood products have radiation-sensitive labels on the pack which indicate if the minimum required radiation dose was applied. They have a shelf life of 14 days after irradiation.

Irradiation is only necessary for the following blood products:

- Red Blood Cells
- Platelets
- Granulocytes

Patient groups requiring irradiated blood products:

Patient Group	Irradiated blood components
Adults or children with acute leukaemia	Not required (except for HLA-selected platelets or donations from first or second degree relatives)
Recipients of allogeneic (donor) HSC transplantation	From the start of conditioning chemo-radiotherapy. Continue while receiving GvHD prophylaxis (usually 6 months' post-transplant) If chronic GvHD or on immunosuppressive treatment, continue irradiated blood components.
Bone Marrow and Peripheral Blood Stem Cell Donors	Provide irradiated cellular components during and for 7 days before the harvest.
Bone Marrow or Peripheral Blood HSC Harvesting for future autologous reinfusion	Provide irradiated cellular components during and for 7 days before the harvest.
Autologous HSC Transplant Patients	From the start of conditioning chemo-radiotherapy until 3 months post-transplant (6 months if total body irradiation was used)
Adults and children with Hodgkin Lymphoma at any stage of the disease	Irradiated cellular components indefinitely
Patients treated with purine analogues (fludarabine, cladribine & deoxycoformicin)	Irradiated cellular components indefinitely
Patients treated with alemtuzumab (anti-CD52 therapy)	Irradiated cellular components indefinitely
Aplastic anaemia patients receiving Anti-Thymocyte Globulin (ATG) therapy	Irradiated cellular components during course of treatment with ATG.
Intrauterine transfusions	Irradiated cellular components for transfusion for up to 6 months post IUT
Neonatal exchange transfusion	Irradiated cellular components

The need for irradiated blood products should be documented in the following places:

- In the computer system of the blood bank
- Sticker on the patient's noted / electronic warning in electronic notes
- Supply the patient with information leaflet and warning card

Recommended ABO blood groups post Bone Marrow Transplant

	DONOR	RECIPEINT	RED CELLS	PLATELETS	FFP
Major ABO incompatibility	A B AB AB AB	O O O A B	O O O A* B*	A B A A B	A B AB AB AB
Minor ABO incompatibility	O O O A B	A B AB AB AB	O O O A* B*	A B A A B	A B AB AB AB
Bidirectional ABO incompatibility	A B	B A	O O	B A	AB AB
*Group O Red Cells may also be used					

Appendix 5

Blood Products
The transfusion laboratory issues the following blood products:

- **Albumin 5%**

Human albumin solution (HAS) 5% is used for protein and volume replacement mainly in burns cases, pancreatitis or trauma. This solution can also be used as a replacement fluid in plasma exchange. Albumin is fractionated from pools of human plasma and heat treated to virally inactivate the product. Bottles of 500ml, 100ml and 50ml are stocked by the department.

- **Albumin 20%**

20% human albumin solution is used to correct hypalbuminaemia and oedema in patients with liver cirrhosis or nephrotic syndrome; to replace fluid during ascites drainage in patients with portal hypertension and to reduce bilirubin levels by exchange transfusion in newborns.100ml and 50ml bottles are available.

- **Anti-D**

All RhD negative women are eligible for anti-D prophylaxis during pregnancy routinely, following a potentially sensitising event and post-delivery if delivered of a Rh D positive infant. This regime has been shown to dramatically reduce the incidence of Haemolytic Disease of the Foetus and New-born. The laboratory stocks 500 IU and 1500 IU vials.

Anti-D can also be given post-transplant when the recipient is Rh D negative and donor Rh D positive, and if large volumes of Rh D positive blood components are given to a Rh D negative patient in emergency situations.

- **Prothrombin Complex Concentrate (PCC – Beriplex)**

Currently the brand name in use is 'Beriplex'. The product is used for emergency reversal of warfarin overdose when intracranial haemorrhage is likely. The product contains Factors II, VII, IX & X and is available in 500 IU vials. The dose is calculated taking into account the body weight of the patient and the INR result:

Initial INR	**2- 2.5**	**2.5- 3**	**3- 3.5**	**>3.5**
Approximate dose ml/kg body weight*	0.9 - 1.3	1.3 - 1.6	1.6 - 1.9	>1.9
Approx. dose IU (factor IX)/kg body weight*.	22.5 - 32.5	32.5 - 40	40 – 47.5	>47.5

Octaplex PCC may also be available

- **Benefix (recombinant coagulation factor IX)**

Used for patients with Haemophilia B, seek advice from haematology consultant.

- **Refacto AF (recombinant factor VIII)**

Used for patients with Haemophilia A, seek advice from haematology consultant.

- **Haemate*P (factor VIII: vWF)**

Used for patients with von Willebrand disease, seek advice from haematology consultant.

- **Fibrinogen Concentrate (factor I)**

Used for the treatment of congenital hypofibrinogenaemia

Requesting products from the laboratory

Requests for all of these products must be made on a transfusion request card.
Anti-D will be issued based on the results of a kleihauer test.

Recording administration

The administration of these products to the patient should be recorded on the drug administration chart and the completed traceability slip return to the transfusion laboratory.

Appendix 6

What groups of staff they are allowed to do providing they have full training and competency assessments:

	Obtaining a pre-transfusion sample	Collection of blood components and products	Administration of blood components
Registered Doctors FY1 and above	√		√*
Anaesthetists	√		√
Registered Nurses	√	√*	√*
Registered Midwives	√	√*	√*
Qualified Physicians Associates	√		
Qualified Nursing Associates	√		√
Operating Department Practitioner (ODP)	√	√	√
Health care assistances/ Theatre support workers	√	√*	
Midwifery support workers	√	√*	
Phlebotomists	√		
Porters		√	
Student Nurses (if phlebotomy trained)	√*		
Student Midwives	√		
Student Nursing Associates	√*		
Student Physicians Associates			

*** Not everyone in this category needs this competency assessment but will if role specific in your clinical area**

Supporting Document 1 – Equality Impact Assessment form

NHS Worcestershire Acute Hospitals NHS Trust

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust		Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust	☒	Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	Dr Sangam Hebballi

Details of individuals completing this assessment	**Job title**	**e-mail contact**
	Lead transfusion practitioner	Wah-tr.transfusionpractitioners@nhs.net
Date assessment completed	**02/07/2021**	

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title:** Blood Transfusion Policy			
What is the aim, purpose and/or intended outcomes of this Activity?	Safe Transfusion			
Who will be affected by the development & implementation of this activity?	❑ x ❑ ❑	Service User Patient Carers Visitors	x x ❑ ❑	Staff Communities Other _____

Is this:	X Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	NHS BT British Society for haematology guidelines Blood safety and Quality regulations NPSA safer practice notice No:14 MHRA Serious hazards of transfusion Serious adverse blood reactions and events
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	n/a
Summary of relevant findings	

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		✓		This policy will have neutral impact on all equality groups.
Disability		✓		
Gender Reassignment		✓		
Marriage & Civil Partnerships		✓		
Pregnancy & Maternity		✓		
Race including Traveling Communities		✓		
Religion & Belief		✓		
Sex		✓		

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Sexual Orientation		✓		
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling **Other Vulnerable and Disadvantaged Groups** (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		✓		
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		✓		

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
	none	.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)				

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	Laura Walters
Date signed	18/05/2023
Comments:	None
Signature of person the Leader Person for this activity	Sangam Hebballi
Date signed	18/05/23
Comments:	none

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	None

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval