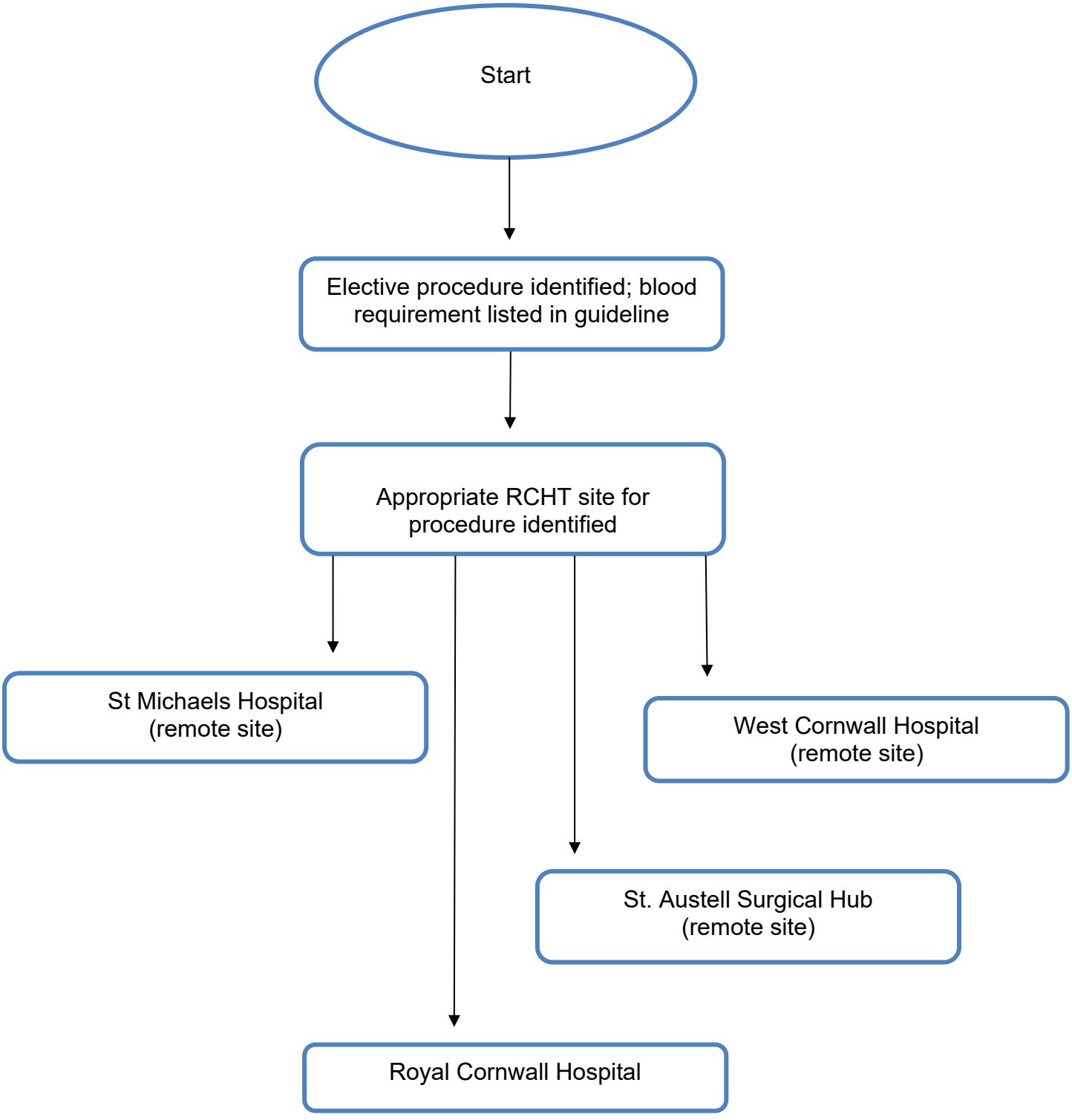
Royal Cornwall Hospitals
NHS Trust

Maximum Surgical Blood Ordering Schedule (MSBOS) Clinical Guideline

V9.0

October 2025

Summary


Start
Elective procedure identified; blood requirement listed in guideline
Appropriate RCHT site for procedure identified
St Michaels Hospital (remote site)
West Cornwall Hospital (remote site)
St. Austell Surgical Hub (remote site)
Royal Cornwall Hospital

1. Aim/Purpose of this Guideline

1.1. This MSBOS is a guide to help to ensure appropriate amounts of blood are available to cover elective surgery at Royal Cornwall Hospitals NHS Trust (RCHT).

1.2. This guidance is not absolute; factors other than type of surgery (low Hb, antiplatelet drugs, bleeding tendency, previous surgery, co-morbidities, etc.) should be considered with respect to both the choice of hospital site and the availability of cross-matched blood.

1.3. This version supersedes any previous versions of this document.

Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation.

The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team.

Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

2. The Guidance

2.1. To provide any blood other than emergency group O, there must be a valid group and screen (G&S) specimen in the lab.

2.1.1. Emergency O Rh D negative (or Rh D positive) may not be suitable for patients with antibodies.

2.1.2. Fully crossmatched blood should always be used in preference to Emergency group O blood. It is much safer and more appropriate for the patient.

2.1.3. A G&S specimen is valid for a maximum of 7 days. This is reduced to 3 days (72 hours) if the patient has been pregnant or transfused in the preceding 3 months.

2.1.4. The sole function of a G&S specimen taken in a pre-assessment clinic is to identify the presence of red cell antibodies and allow appropriate planning for antigen negative blood to be available for the patient. It does not contribute to the availability of blood at surgery for which a specimen of less than 7 days old must be available.

2.2. Electronic Issued (EI) Red Cells

2.2.1. Electronic Issue (e-match) is the supply of blood on the basis of an automated confirmed blood group and a negative antibody screen. Blood then does not require crossmatching and can be dispensed within 5 minutes of request (plus travel time), depending on current work activity. A valid sample must be available in the lab and must have been through the automated testing procedure.

2.2.2. Electronic Issue is only allowable where a patient's plasma does not contain (or has not been known to contain) red cell antibodies, where there is no history of a solid organ transplant or stem cell transplant, and where there has been sufficient time for a valid (<7day old) sample to be grouped and screened by analyser (1.5 hours minimum). Where these criteria are not met, a full manual crossmatch must be performed.

2.3. Emergency group O blood available

- SMH (Hayle) 2 units (O RhD negative).
- WCH (Penzance) 2 units (O RhD negative).
- SASH (St. Austell) 2 units (O RhD negative).
- RCH (Transfusion lab) 4 units (2 O RhD negative + 2 O RhD positive).
- RCH (Tower theatre) 1 units (O RhD negative).
- RCH (Trelawny theatre) 1 units (O RhD negative).
- RCH (Delivery Suite) 4 units (2 adult size + 2 neonatal size, O RhD negative).

2.3.1. It is imperative that if these units are used, the transfusion laboratory is contacted on ext. 2500, or bleep 3220 out of hours, to ensure they are replaced in a timely manner.

2.3.2. In special circumstances such as relocation of services, higher activity or national stock blood levels reduced, these stocks will be reviewed and adjusted if necessary.

2.3.3. If emergency blood is used in a remote site, theatres with ongoing surgeries should be notified of this, and when the replacement units are expected to arrive onsite.

2.4. Transportation of samples and blood components

2.4.1. Transport time to remote sites must always be factored into requests for blood from RCH. This is likely to be a minimum of an hour.

2.4.2. If there is no valid G&S sample in the lab on day of surgery for revision procedures at SMH, due to transport times of courier or taxi, surgery should not proceed until the G&S sample has been analysed in the lab and blood is available in SMH fridge.

2.4.3. If there is no valid sample in the laboratory and blood is required urgently a G&S sample must be sent via taxi (ordered by the operating site) as the courier does not go directly to RCH. This may take a minimum of 1 hour. If blood is not urgently required it may be acceptable to send the sample via courier.

2.4.4. If surgery proceeds and blood loss occurs before this automated testing is performed and crossmatched blood is requested this will necessitate a manual crossmatch which will take 45 minutes once a sample is received in the laboratory. Bleeding patients should be transferred early to RCH for further management.

2.5. Remote sites specific requirements – patient with antibodies

2.5.1. When an antibody has been identified a letter will be written to the patient by the pre-assessment team requesting they attend their GP 3 days prior to surgery for a G&S sample to be taken. This will ensure crossmatched blood is available for the patient on the day of surgery. See section 2.4 regarding transportation of samples from remote sites and the time delay this may incur.

2.5.2. The patient should be discussed by the MDT, with input from the Transfusion Practitioners (or Transfusion Lab Lead in the absence of a TP); to determine if the patient is suitable for surgery at a remote site or if surgery will need to be performed at RCH.

2.5.3. Emergency RhD negative blood will probably not be suitable for patients with clinically significant antibodies. It is therefore imperative that fully crossmatched blood is available at the remote site prior to commencement of surgery.

2.6. Crossmatched blood availability at remote sites

2.6.1. If required, patients who require a Pre-assessment Clinic (PAC) sample should have this taken less than 3 months prior to surgery to check for antibody and blood group status.

2.6.2. For some higher risk procedures in the absence of an antibody the patient will be asked via letter to attend their GP 3 days prior to surgery for a G&S as detailed in the table in 2.9 below.

2.6.3. Be aware that there is a small risk that patients may have developed antibodies since the PAC sample, particularly if transfused in the meantime.

2.7. In case of significant blood loss at a remote site

2.7.1. Where emergency blood has been given, and bleeding is ongoing, the patient should be transferred to RCH for ongoing care.

2.7.2. Further blood components (FFP, platelets and cryoprecipitate) are not available at remote sites.

2.7.3. Excellent communication must be maintained with the transfusion laboratory to ensure the major haemorrhage protocol is activated and Pack A is awaiting the patient's arrival at RCH. See the Blood Transfusion Policy – Transfusion in Massive Haemorrhage Adult Appendix 4. Guideline Summary

2.7.4. If patient is transferred to RCH from a peripheral site, any crossmatched units for the patient must be packed correctly in a blood box and sent with the patient to RCH. If there is no blood box available, units are to be placed back into the local blood fridge. Upon arrival the blood box must be taken directly to the transfusion laboratory.

2.8. MSBOS for remote RCHT sites (WCH, SMH, SASH)

ORTHOPAEDICS	**Within 3 months of surgery**	**3 days prior to surgery**	**If antibodies detected (sample at day 3 prior to surgery)**
Osteotomy (tib/fib)	G&S		2 units
THR	G&S		2 units
TKR	G&S		2 units
TSR	G&S		2 units
Revision THR	G&S	2 units	4 units
Revision TKR	G&S	2 units	4 units
Revision TSR	G&S	2 units	4 units
BREAST SURGERY			
Simple Mastectomy	G&S	-	2 units
Mastectomy with Axillary Clearance	G&S		2 units

2.9. Patients with antibodies

If an antibody has been identified in the pre-op assessment clinic it is the responsibility of this clinic to ensure a valid G&S specimen, and crossmatched blood if necessary, is made available for surgery. This MSBOS advises how many units should be ordered in. This should be done at least a day (24 hours) before surgery.

2.10. Crossmatched blood availability at RCH

2.10.1. In the absence of antibody it is the responsibility of the surgeon to supply a G&S specimen if considered necessary.

2.10.2. If no antibodies are present this sample may be taken on admission.

2.10.3. Group specific blood can be available on request 15 minutes after the receipt of a valid G&S specimen.

2.11. In case of significant blood loss at RCH

Call 2222 to activate the Major Haemorrhage Protocol. The transfusion lab and Transfusion Practitioners will be notified. See the Blood Transfusion Policy – Transfusion in Massive Haemorrhage Adult Appendix 4. Guideline Summary

2.12. MSBOS for RCH

GENERAL SURGERY	**Pre-op clinic**	**On admission**	**If antibodies detected (sample at day 3 prior to surgery)**
All Laparoscopic Colectomies	G&S	-	G&S
All Open Colectomies	G&S	G&S	2 units
AP Resection	G&S	G&S	2 units
Anterior Resection	G&S	G&S	2 units
Partial Gastrectomy	G&S	-	G&S
Splenectomy	G&S	G&S	4 units
Laparotomy	G&S	G&S	2 units
BREAST SURGERY			
Major reconstruction	G&S	G&S	2 units
Mastectomy with Axillary Clearance	G&S		2 units
VASCULAR SURGERY			
Above Knee Amputation	G&S	G&S	2 units
Below Knee Amputation	G&S	G&S	2 units
Axillo-femoral Bypass	G&S	G&S	2 units
Aorto-femoral Bypass	G&S	G&S	4 units
Femoro-popliteal Bypass	G&S	G&S	2 units
Carotid Endarterectomy	G&S	G&S	2 units
Open Aortic Aneurysm Repair	G&S	4 units	4 units
Endovascular Aortic Repair	G&S	G&S	4 units
Profundaplasty	G&S	G&S	2 units

OBSTETRICS	Pre-op clinic	On day of surgery	If antibodies detected (sample at day 3 prior to surgery)
Elective Caesarean section (CS)	G&S		2 units
CS for Placenta Praevia	G&S	2 units	2 units
Placenta Removal		G&S	2 units
GYNAECOLOGY			
Removal of Ectopic pregnancy - if ruptured		G&S	4 units
Hysterectomy (Laparoscopic/open)	G&S	G&S	2 units
Laparotomy for ovarian cancer	G&S	G&S	2 units
Myomectomy (Laparoscopic/open)	G&S	G&S	2 units
Oophorectomy (cyst) - benign	G&S	G&S	2 units
Vulval cancer radical surgery	G&S	G&S	2 units

ORTHOPAEDICS	Pre-op clinic	On day of surgery	If antibodies detected (sample at day 3 prior to surgery)
Osteotomy (tib / fib)	G&S	G&S	2 units
THR	G&S		2 units
TKR	G&S		2 units
TSR	G&S		2 units
Revision THR	G&S	G&S	4 units
Revision TKR	G&S	G&S	4 units
Revision TSR	G&S	G&S	4 units
UROLOGICAL SURGERY			
Nephrectomy	G&S	G&S	2 units
Transurethral resection of Prostate	G&S		2 units
Transurethral resection of bladder tumour	G&S		2 units
PCNL	G&S	G&S	2 units
Adrenalectomy	G&S	G&S	2 units
Pyeloplasty	G&S	G&S	2 units

ENT			
Radical Neck Dissection	G&S	G&S	2 units
Laryngectomy	G&S	G&S	2 units
BARIATRIC			
Gastric Band	G&S	G&S	2 units
Gastric Bypass	G&S	G&S	2 units

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Appropriate availability of blood for elective surgery
Lead	Dr. Oliver Pietroni, consultant anaesthetist, Chair of the Hospital Transfusion Committee.
Tool	Incident monitoring and audit, each request form/G&S
Frequency	Daily monitoring by BMS (laboratory staff) during provision of blood
Reporting arrangements	Non-compliance will be raised as an incident on Q-Pulse and investigated accordingly, raising an incident on Datix where appropriate
Acting on recommendations and Lead(s)	The Hospital Transfusion Team (HTT) will take executive action if urgently required. The HTT reports directly to the Hospital Transfusion Committee (HTC) which sits 3 times per annum.
Change in practice and lessons to be shared	HTT will identify appropriate action and is structured to communicate with clinical workforce and ensure corrective action is undertaken. The HTT will determine if any alterations to this document are required.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Maximum Surgical Blood Ordering Schedule (MSBOS) Clinical Guideline V9.0
This document replaces (exact title of previous version):	Maximum Surgical Blood Ordering Schedule (MSBOS) Clinical Guideline V8.0
Date Issued/Approved:	September 2025
Date Valid From:	October 2025
Date Valid To:	October 2028
Directorate/Department responsible (author/owner):	Pedro Valle Vallines, Lead Transfusion Practitioner
Contact details:	rcht.transfusionadmin@nhs.net
Brief summary of contents:	Arrangements for provision of blood in elective surgery.
Suggested Keywords:	MBOS, MSBOS.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Hospital Transfusion Team, Hospital Transfusion Committee
Manager confirming approval processes:	Richard Andrzejuk
Name of Governance Lead confirming consultation and ratification:	Kevin Wright
Links to key external standards:	Guidelines for the Clinical Use of Red Cell Transfusion (BSH). Patient Blood Management (NHSBT/DoH). Better Blood Transfusion 3 (DoH).
Related Documents:	Blood Transfusion Policy. Blood and Blood Product Refusal Policy.

Information Category	Detailed Information
Training Need Identified?	No – all medical staff completes blood transfusion e-learnings. Blood cover already part of the pre-surgery checks.
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/Pathology

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
June 2007	V1.0	New Document.	Stephen Bassey, Transfusion Laboratory Manager
July 2009	V2.0	Minor changes.	Stephen Bassey
April 2011	V3.0	Revision and reformatting throughout.	Dr Richard Noble, Haematology Consultant
July 2014	V4.0	Minor changes to tables, reformatting throughout to meet RCHT Documents Library criteria.	Dr Richard Noble, Haematology Consultant
November 2017	V6.0	Reformatting tables, addition of G&S for #NOF, removal of G&S for mastectomy, change of emergency O neg locations, addition of parameters for surgery at SMH.	Nicki Jannaway, Lead Transfusion Practitioner
March 2019	V7.0	Surgical procedures at SMH have changed to include orthopaedic procedures which dictate a need for changes to this document.	Nicki Jannaway, Lead Transfusion Practitioner
September 2021	V8.0	General document review, minor grammar changes and paragraph rewording to make it clearer. Addition 2.7.3 new MHP activation and 2.3.2 to consider changes on blood provision if relocation of services. Updated appendix 1, corrected appendix 2 and new Trust template applied.	Pedro ValleVallines, Lead Transfusion Practitioner

Date	Version Number	Summary of Changes	Changes Made by
September 2025	V9.0	Entire document review, merged specific remote sites into a generic ‘remote site’ category. Added SASH, reworded patients with antibodies section. Updated summary flowchart and updated the MSBOS list to include Obstetric and Gynae surgeries at remote sites.	Pedro ValleVallines, Lead Transfusion Practitioner. Dr. Oliver Pietroni, consultant anaesthetist

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy/policy/proposal/service function to be assessed:	Maximum Surgical Blood Ordering Schedule (MSBOS) Clinical Guideline V9.0
Directorate and service area:	Blood Transfusion/Clinical Support and Services
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Pedro ValleVallines, Lead Transfusion Practitioner
Contact details:	01872 25 3093

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To ensure that adequate blood is provided for elective surgery at all RCHT sites, while adhering to Patient Blood Management and minimising wastage and encouraging appropriate use. To be used by surgical, anaesthetic, pre-assessment and transfusion teams.
2. Policy Objectives	To provide a framework for the ordering of red blood cells at different sites.
3. Policy Intended Outcomes	Appropriate blood cover is ensured for all elective procedures.
4. How will you measure each outcome?	All requests will be monitored on an ongoing basis by BMS staff in the transfusion laboratory.
5. Who is intended to benefit from the policy?	Any patient having elective surgery, staff involved with the care of these patients.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/visitors: No • Local groups/system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/groups:** Hospital Transfusion Team, Anaesthetics Governance, Surgical Teams.
6c. What was the outcome of the consultation?	Document approved.
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** Yes, local statistics and audits.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	Some patients may refuse transfusion of blood components due to religious beliefs, Blood and Blood Product Refusal Policy is in place and signposted.

Protected Characteristic	(Yes or No)	Rationale
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Pedro ValleVallines, Lead Transfusion Practitioner.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis