Aneurin Bevan University Health Board

Blood Component Transfusion Policy

2014

N.B. Staff should be discouraged from printing this document. This is to avoid the risk of out of date printed versions of the document. The ABUHB Intranet should be referred to for the current version of the document.
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<tr>
<td>Allogeneic</td>
<td>Donor blood for transfusion</td>
</tr>
<tr>
<td>Anti- D</td>
<td>Anti-D (RHO) Immunoglobulin is used in preventing antibody formation in rhesus negative women who have a rhesus positive baby and treating rhesus negative people who have been given a blood transfusion of rhesus positive blood.</td>
</tr>
<tr>
<td>All Wales Better Blood Transfusion Teams</td>
<td>The Better Blood Transfusion team at the Welsh Blood Service work closely with hospitals in Wales to improve the transfusion process and practices.</td>
</tr>
<tr>
<td>All Wales Transfusion Record</td>
<td>Single document designed to assist clinical staff in the safe authorisation and administration of blood components.</td>
</tr>
<tr>
<td>All Wales Drug Record</td>
<td>Document used across Wales for the safe prescription of medicinal products. No longer used for the authorisation of blood components.</td>
</tr>
<tr>
<td>Authorise Practitioner</td>
<td>Member of Staff who is authorised to perform specific procedure(s) in compliance with regulations and guidelines</td>
</tr>
<tr>
<td>Autologous</td>
<td>Blood from the same person (eg Cell Salvage)</td>
</tr>
<tr>
<td>Blood Bank</td>
<td>Controlled Storage Area for Blood Components (used interchangeably with Transfusion Laboratory)</td>
</tr>
<tr>
<td>Blood component</td>
<td>Fraction of whole blood produced in a Regional Blood Centre identified by a unique Donor / Serial Number eg. Red cells, platelets, fresh frozen plasma.</td>
</tr>
<tr>
<td>Blood Safety and Quality Regulations (BSQR)</td>
<td>Statutory requirements based on EU directives for blood safety and quality which came into UK law in Nov 2005. Main focus is component safety, traceability and reporting of serious adverse reactions and events</td>
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<tr>
<td>Cell Salvage</td>
<td>System to salvage autologous blood for re-infusion if required. Intra-Operative washes and filters blood; Post-Operative filters blood from a wound drain for re-infusion.</td>
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<tr>
<td>Donor number</td>
<td>Bar coded number which identifies the donor from whom the blood component has been prepared.</td>
</tr>
<tr>
<td>Electronic Issue</td>
<td>If two group and save samples, both having corresponding blood groups, and negative antibody screens for that patient are provided then blood can be issued without testing of donor cells with recipient plasma.</td>
</tr>
<tr>
<td>Good Manufacturing Practice</td>
<td>A set of principles which guide and control every function of the transfusion laboratory in order to ensure that quality is consistently assured, maintained and improved resulting in the highest standard of safety for blood component handling and issue.</td>
</tr>
<tr>
<td>Hospital Transfusion Committee</td>
<td>ABUHB wide committee open to representatives from all disciplines meeting three times a year. The objective of the HTC is to ensure the highest standard of evidence based transfusion in compliance with BSQR and SHS.</td>
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<td>Hospital Transfusion Team</td>
<td>Blood transfusion specialists meeting regularly to support the HTC.</td>
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<td>ID Band</td>
<td>Patient identification band for all inpatients and day case patients, must be worn at all times</td>
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<tr>
<td>Log Book</td>
<td>The record book the authorised collector uses to put the patient core identifier details into to then check against the issue register in blood bank.</td>
</tr>
<tr>
<td>Medicines and Healthcare products Agency (MHRA)</td>
<td>Governmental Agency with responsibility for standards of safety, quality and performance. Designated as the competent authority to ensure compliance with BSQR.</td>
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<tr>
<td>National Comparative Audit</td>
<td>The national comparative audit of blood transfusion is run by the National Blood Service in collaboration with the Royal College of Physicians</td>
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<tr>
<td>National Patient Safety Agency (NPSA) Safer Practice Notice 14</td>
<td>Government Agency that was created to monitor patient safety and incidents. Notice 14 specifically designed to monitor and maintain standards in blood transfusion.</td>
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### Patient Core Identifiers
Requirement to confirm patient identification including first and last name, date of birth, first line of address and hospital number.

### Positive Patient Identification
Method of obtaining the patient core identifiers asking the patient to state them.

### Quality Management Systems
Electronic based system used to communicate to employees what is required to produce the desired quality of products and services and to influence employee actions to complete tasks and training according to the quality specifications. ABUHB use Q-Pulse system.

### Registered Practitioner
Member of staff whose name is held on a professional nurse or pharmacist register.

### Regulations

### Remote Issue
Blood components that are issued in a different area where suitability for electronic issue has been confirmed.

### Reservation Period
Amount of time blood component is left in issue fridge and available for collection. ABUHB policy is currently 48 hours.

### Serious Hazards of Transfusion (SHOT)
UK independent, professionally-led haemovigilance scheme.

### Serious Adverse Blood Reactions and Events (SABRE)
System used for the mandatory reporting of adverse reactions and events to the MHRA.

### Service Level Agreement
A contract between a service provider and customer that specifies what service will be provided.

### Special Requirements
Components which are processed to meet a patient’s specific transfusion requirements e.g. irradiated components.

### Standards for Healthcare Services (SHS) Wales
Framework of healthcare standards to support the NHS and partner organisations in providing effective, timely and quality services across all healthcare settings.

### Traceability
Legal requirement to provide 100% evidence of the fate of issued blood components.

### Transfusion
The administration of blood or blood components.

### Transfusion Assessors
Qualified nurses who have successfully completed the NPSA assessors training to be able to assess blood transfusion competencies in their clinical area.

### Transfusion Laboratory
Specialist section of Pathology providing compatibility and other transfusion related testing and controls and issues components from transfusion.

### Transfusion Practitioner
Appointed practitioner responsible for education, haemo-vigilance and promotion of safe transfusion.

### Transfusion Request Form
Specific form.

### Zero Tolerance
Minimum acceptance criteria for pre-transfusion requests and samples.
Accronyms

<table>
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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>AAGBI</td>
<td>The Association of Anaesthetists of Great Britain and Ireland</td>
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<tr>
<td>ABUHB</td>
<td>Aneurin Bevan University Health Board</td>
</tr>
<tr>
<td>BMS</td>
<td>Biomedical Scientist</td>
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<tr>
<td>BSQR</td>
<td>UK Blood Safety and Quality Regulations</td>
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<tr>
<td>CMV</td>
<td>Cyto-Megalo Virus</td>
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<tr>
<td>FFP</td>
<td>Fresh Frozen Plasma</td>
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<tr>
<td>GMP</td>
<td>Good Manufacturing Practice</td>
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<td>HCPC</td>
<td>Health and Care Professions Council</td>
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<td>HTT</td>
<td>Hospital Transfusion Committee</td>
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<td>ID</td>
<td>Identification</td>
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<td>NCA</td>
<td>National Comparative Audits</td>
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<td>NPSA</td>
<td>National Patient Safety Agency</td>
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<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<td>SABRE</td>
<td>Serious Adverse Blood Reactions and Events</td>
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<td>SHOT</td>
<td>Serious Hazards Of Transfusion</td>
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<tr>
<td>SHS</td>
<td>Standards for Healthcare Services</td>
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<tr>
<td>TAOC</td>
<td>Transfusion Associated Circulatory Overload</td>
</tr>
<tr>
<td>Ta-GvHD</td>
<td>Transfusion Associated – Graft versus Host Disease</td>
</tr>
<tr>
<td>TRALI</td>
<td>Transfusion Related Acute Lung Injury</td>
</tr>
<tr>
<td>vCJD</td>
<td>Variant Creutzfeldt-Jakob disease</td>
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<tr>
<td>WBS</td>
<td>Welsh Blood Service</td>
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1. Introduction

Blood components and products supplied by UK Transfusion Centres are subject to stringent screening for infectious agents and other quality measures which guarantee minimal risk to the recipient from a defective product.

However, evidence from the Serious Hazards of Transfusion (SHOT) scheme and the Medicines and Healthcare Products Agency (MHRA) show that errors in the handling, storage, issuing, collection and administration of these components within hospitals constitute avoidable risks to transfused patients.

In addition, the inappropriate requesting, avoidable wastage and loss of traceability of blood components are elements of poor blood management which constitute failure to meet the requirements of Standard 17 of the Standards for Healthcare Services (Wales).

Safe and Appropriate Blood Transfusion requires trained and competent staff supported by policies based on evidence based best practice. This Policy describes the principles to be followed by all ABUHB staff who have a role in the transfusion process and is informed by and subject to the following regulations and national guidance:

UK Blood Safety & Quality Regulations (2005) as amended (BSQR)
BCSH Transfusion Guidelines: www.bcshguidelines.com
Serious Hazards of Transfusion (SHOT) www.shotuk.org

2. Policy Statement

ABUHB is committed to providing Safe and Appropriate Transfusion for all patients within its care (and in those facilities with which Service Level Agreements exist) through compliance with legislation, national guidance and current evidence based best practice as required by Standards for Health Services (Wales) Standard 17: Blood Management.

3. Aims, Objectives & Scope:

This Policy aims to provide a clear framework for staff to ensure they understand the current legal and best practice requirements for the storage, handling and transfusion of blood components and products.

It sets the Health Board’s standards for safe and appropriate transfusion and relates to all staff who engage in procedures related to the transfusion of blood components or products including those obtained by Cell Salvage techniques.

NB: While this Policy applies generally to all patient groups some, eg. Paediatric Transfusion (see section 12.1, p 15) have specific guidelines and recommendations which should be followed.
4. **Related ABUHB Documents:**

- Transfusion Sample Acceptance / Rejection Policy  
  ABUHB/Clinical/0269
- Massive Haemorrhage Toolkit  
  ABUHB/Clinical/0576
- Appropriate Use of Platelets and FFP  
  ABUHB/Clinical/0685
- Blood Shortage Clinical Management Plan  
  ABUHB/Clinical/0661
- Anti-D Policy  
  ABUHB/Maternity/0610
- Dignity at Work Policy  
  ABUHB/HR/0174
- Blood Bank Standard Operating Procedures (see Pathology QPulse System)  

5. **Standards for Healthcare Services (Wales)**

Standard 17: Blood Management.

a. Compliance with legislation and national guidance on the supply and use of blood, blood products and blood components.

b. The use of schemes and systems to reduce wastage of blood, blood products and blood components.

c. Effective planning for blood shortages

d. An ongoing programme of education, training and competence assessment for all staff involved in the transfusion process

e. The reporting of all adverse blood reactions and incidents

6. **Roles and Responsibilities:**

a. **The Chief Executive** is ultimately responsible for the implementation of this policy and is legally responsible for compliance with the Regulations.

b. The **ABUHB Hospital Transfusion Committee** (HTC) is responsible for the content and review of this Policy and monitors compliance through its Hospital Transfusion Team and Transfusion Practitioners.

c. **Transfusion Practitioners** promote safe and appropriate transfusion through education and training of clinical staff and assist in the investigation of serious adverse events and reactions and the reporting of these to the relevant bodies.

d. **Medical, Nursing and Clinical Directors, Clinical Leads and the relevant Departmental Managers** are responsible to ensure that this Policy is implemented and that their staff (Table 1) are able to make use of the educational and training opportunities available (see section on Training below).

e. **Individual staff** are responsible for maintaining their personal training records and ensuring that they do not carry out any procedure for which they have not received timely, relevant and up to date training
### Table 1: Staff groups involved in the Transfusion Process.

<table>
<thead>
<tr>
<th>Doctors</th>
<th>Nurses</th>
</tr>
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<tr>
<td>Biomedical Scientists (BMS)</td>
<td>Operating Department Practitioners (ODP)</td>
</tr>
<tr>
<td>Haematology Specialists</td>
<td>Phlebotomists</td>
</tr>
<tr>
<td>Healthcare Support Workers (HCSW)</td>
<td>Porters &amp; Couriers</td>
</tr>
<tr>
<td>IT Support</td>
<td>Ward Clerks</td>
</tr>
<tr>
<td>Midwives</td>
<td></td>
</tr>
</tbody>
</table>

#### 7. Training (SHS 17,d):

a. The NPSA Safer Practice Notice 14: “Right Patient, Right Blood” required all staff who are involved in the Blood Transfusion process to be trained and assessed as competent for their particular role(s). An ongoing programme of education and competency assessment is overseen by the Transfusion Practitioners with support from trained Transfusion Assessors in the clinical areas. Transfusion training is also incorporated into a number of Directorate / Departmental study programmes.

b. Training and competency in the handling and storage of blood components is a legal requirement under BSQR and this is achieved through annual assessment of compliance with Good Manufacturing Practice (GMP) as monitored by the MHRA. This applies to Blood Bank staff responsible for the receipt, storage and issue of blood components, and staff who transport blood components (eg Porters, Couriers).

#### 8. Implementation:

This Policy replaces the previous version (2010). Notification of its publication will be posted on the Intranet. Directorate Managers should ensure that all relevant staff are made aware of the Policy, especially the sections which apply to their individual roles.

#### 9. Audit:

a. National Comparative Audits (NCA) of Blood Transfusion take place regularly in critical areas of the blood transfusion process.

b. The All Wales Better Blood Transfusion Team carry out occasional audits to inform strategic development across Wales.

c. Internal Audits of Good Manufacturing Practice are scheduled within the blood transfusion laboratories.

d. Participation in the Serious Hazards of Transfusion (SHOT) Haemovigilance scheme and Serious Adverse Blood Reactions and Events (SABRE) reporting to the MHRA constitute audit of practice in both the laboratory and clinical areas.

#### 10. Review:

This Policy will be kept under review by the Hospital Transfusion Team and Committee.
11. **Fundamental Principles of Safe and Appropriate Transfusion:**

Correct Identification is critical and must be checked at all stages of the process from decision to transfuse to final administration – extra care is required where the patient is unable to provide their own core identifiers or they are unknown.

**No ID Band – No Transfusion!**

Core Patient Identifiers for known Patient:

- First & Last Names
- Date of Birth
- 1st line of address
- Unique Hospital or NHS Number

Valid ID Bands must be worn by all In-Patients and Day Case Patients. If removed for any reason they must be replaced immediately. Any alternative must be fully risk assessed.

Documentation must be clear, legible and accurate to ensure that the appropriate instructions, records and notes are recorded before, during and after the transfusion.

Communication must be clear and unambiguous (Staff to Staff, Staff to Patients and other relevant agencies) this ensures that the correct information is given and understood. If in doubt ASK!

Evidence from the MHRA shows that loss of concentration through distraction is a major cause of error and serious adverse events. While transfusion is often given in emergency situations adherence to this Policy and related standard procedures at all times will assist in the safe provision and handling of blood components, their effective transfusion and a positive patient outcome.
11.1 Patient Identification:

11.1.1 Positive Patient Identification: Where the patient is alert, responsive and capable of confirming their identity they are asked to state their:

- Full Name
- Date of Birth
- 1st line of address

Any discrepancy between the stated details, the ID Band and the accompanying documentation must be clarified and if necessary corrected before proceeding.

- Record Number (Hospital, NNN or Emergency)

The patient’s Hospital or NHS Number must also be checked against the ID Band and accompanying documentation. Any discrepancy must be resolved before continuing.

NB: There are some scenarios where it is not possible to check the Hospital or NHS Number eg Phlebotomy in Out-Patient Departments or in the community. This is acceptable as long as the other core patient details as stated by the patient match exactly those on the request form.

11.1.2 Unconscious, un-responsive or confused patients and infants:

a. The ID Band must be used to check patient core identifiers. An appropriate relative or carer may be asked to confirm if present

b. Where an ID Band is not routinely provided (eg Out-patients) extra care must be taken to confirm the patient’s identity

c. Any person removing an ID Band for whatever reason is responsible for replacing it immediately

References:

ABUHB Transfusion Sample Acceptance / Rejection Policy
Guidelines for Administration of Blood Components (2009)
Guidelines for pre-transfusion testing (BCSH 2012)
www.transfusionguidelines.org
11.3 Unknown Patients:

a. Where the identity of the patient is unknown (eg in the Emergency Department) the minimum identifiers required are:

- an emergency number
- gender
- an indication of the patient’s age eg child, young adult, elderly.

b. Non-sequential emergency numbers should be used to reduce transcription errors

11.2 Documentation for Transfusion:

All ID Bands, written requests, records, notes and labelling must be clear and legible.

11.2.1 The Medical notes must contain:

a. reviewed and signed paper reports of investigations which contribute to safe and appropriate transfusion (eg. Haematology Reports, Blood Group and Antibody results) unless these have been incorporated into the Electronic Patient Record accessible via the ABUHB Clinical Workstation / Myrddin
b. a valid reason for the transfusion and the expected benefits
c. a record of the discussion with the patient regarding the risks, benefits and alternatives or reason why this did not occur
d. a record of the patient’s consent, refusal or reason why not obtained
e. where discussion and obtaining of informed consent is not possible before the transfusion the patient must be given information regarding the transfusion as soon as possible afterwards
f. the authorisation to transfuse blood and blood components - red cells, platelets or FFP which should be made on the All Wales Transfusion Record (see 11.2.4 below and Appendix E, p 25)
g. the prescription for plasma derivitives eg. Anti-D, Immunoglobulins, Fibrinogen concentrate etc which must be made on the All Wales Drug Chart
h. a record of the outcome and interpretation of effectiveness

11.2.2 The Transfusion Request Form must:

a. be completed by an authorised person prior to a sample being taken
b. contain accurate patient and request details
c. contain a valid reason for the request
d. contain clear indication of High Risk if present
e. be signed by the authorised requestor
f. have the Central section completed and signed by the person who has taken the sample
11.2.3 **The Transfusion Record:**

a. Is to be used for Blood Components (Red Cells, Platelets and FFP/Octaplas)

b. Must be completed by an authorised person with due regard to the incorporated checklists – especially any special requirements.

c. Must be kept in the patient’s medical notes.

*NB Plasma derivatives supplied by Blood Bank are classed as Medicinal Products and must be prescribed on the All Wales Drug Chart. They are issued with Traceability documentation however and clinical staff may find the Transfusion Record a useful additional document for recording of observations and affixing the traceability sticker.*

11.2.3 **Traceability Documentation:**

a. Must contain exactly the same core patient identifiers as the other documentation and ID Band

b. Must match the Donor Number on the component bag

c. Must be completed with the date and time of commencement of transfusion and signed

d. Must have the Blue section returned to the Blood Bank

e. Must have the Red Sticker placed on the Transfusion Record (if anti-D or plasma derivatives, these should be placed in an appropriate place in the Medical Notes if not using the transfusion record (see 11.2.3 above)

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**References:**

ABUHB Transfusion Sample Acceptance / Rejection Policy

All Wales Transfusion Request Form

All Wales Transfusion Record

Guidelines for administration of blood components (BCSH 2012)

Guideline for the management of acute transfusion reactions (BCSH 2012)

www.transfusionguidelines.org
11.3 Clear Communication of information related to the patient and the transfusion

a. Clinical and Laboratory staff handovers are a critical part of the transfusion process.

b. All verbal instructions / requests / information must be unambiguous and, where appropriate, confirmed in writing. If in doubt ask for clarification immediately.

c. Where a caller cannot be understood or is unable to give clear information ask to speak to a senior or other member of staff.

d. All telephone requests to Blood Bank should be logged with the name of the requesting physician recorded.

e. All verbal requests for Blood Components and Products must include the patient’s core identifiers, location and whenever possible a contact name.

f. Important subsidiary information must always be communicated along with transfusion related information eg. special requirements, identification of samples from a High Risk Patient.

g. In massive haemorrhage events a Lead Communicator must be designated by the Clinical Lead to be the sole communicator with Blood Bank and support services (See Massive Haemorrhage Toolkit).

h. Unnecessary and duplicate calls to Blood Bank cause delay and distraction.

i. Staff engaged in a critical task must not be distracted. Wait until they are able to safely respond. Distraction is a major cause of avoidable error.

j. At all times staff must treat each other with respect – especially when on the telephone - and be considerate of the unseen pressures that may exist.

k. Contact and distribution lists must be kept up to date and any errors reported to the appropriate owner / manager immediately.

References: Consider separate page combining all three reference blocks.

ABUHB Transfusion Sample Acceptance / Rejection Policy
ABUHB Massive Haemorrhage Toolkit
ABUHB Clinical Management of Blood Shortages Plan
All Wales Transfusion Request Form
All Wales Transfusion Record
Guidelines for administration of blood components (BCSH 2012)
Guideline for the management of acute transfusion reactions (BCSH 2012)
www.transfusionguidelines.org
12.0 The Transfusion Process:

a. The Blood Transfusion Process, from donor to patient, is a multi-disciplinary, multi-procedure, multi-site process with a significant probability for unexpected and avoidable adverse events to occur anywhere within the chain.

b. All staff involved in the Transfusion Process should be trained and competency assessed for their role according to their governing regulations.

c. Safe and Appropriate Transfusion begins with the clinical decision to transfuse which must include a Risk / Benefit assessment for each patient and consideration of suitable Alternative Therapies and any Special Requirements for Components eg Irradiated and / or Cytomegalovirus (CMV) Negative units.

d. National Guidelines and Audits provide evidence based recommendations for safe and appropriate transfusion and clinical staff should be aware of these and incorporate them into local practice whenever possible.

e. Once a decision to transfuse is made all staff have a duty of care to ensure that they comply with current legislation, guidelines and this policy for the management of the transfusion and safe handling of blood and blood components.

f. Massive Haemorrhage, Acute Shortage of Blood Components and Transfusion Reactions will require Specialist Haematology support which is always available and should be sought at the earliest opportunity whenever there is a need for increased or specialised transfusion support.

g. The Welsh Blood Service has experienced scientific and consultant medical staff who will provide additional support when required. They liaise closely with the ABUHB Blood Bank staff and are represented on the HTC.

h. Health & Care Professions Council (HCPC) registered Blood Bank staff are qualified and experienced to give general transfusion advice eg on local policy, sample requirements and the issue and suitability of blood components and products. They are also empowered to query any transfusion request which may appear inappropriate. While no clinical request will be refused, inappropriate requesting is audited and may be reported to the HTC and Risk Management.

i. Transfusion Practitioners promote Safe Transfusion through education and incident investigation. Ward based Transfusion Competency Assessors facilitate the communication of and response to information and alerts.

j. Full Traceability of blood components is a legal requirement and requires clinical staff to be vigilant in the return of documentation.

k. Mandatory reporting of serious adverse events and reactions ensures that the quality of the service is reviewed and continuously improved.
12.1 Paediatric Transfusion Considerations:
See the ABUHB Massive Haemorrhage Policy (ABUHB/Clinical/0576) on the ABUHB Intranet and the BCSH Transfusion Guidelines for Neonates and Older Children – 2004 (currently being updated: check website www.bcshguidlines.com)

a. Paediatric and Neo-natal units should have their own departmental protocols for transfusion
b. Volumes must be prescribed in mls not units
c. Infants and small children are at increased risk of TACO and require careful pre-transfusion assessment
d. Patients born after 01 January 1996 who require FFP should be transfused with non-UK sourced treated plasma to reduce the risk of transfusion transmitted vCJD. ABUHB Blood Banks currently stock Octaplas which meets these criteria

12.2 Emergency Transfusion / Massive Haemorrhage:

a. Procedures are in place to ensure prompt and effective provision of blood and blood components in emergencies.
b. Stocks of O Rh(D) Negative, Kell negative red cells are kept for situations where there is insufficient time to fully test the patient’s pre-transfusion sample.
c. Where O Neg blood is used it is imperative that samples for pre-transfusion testing are taken before the blood is transfused. This ensures pre-transfusion testing is not affected by contamination with transfused red cells.
d. See the Management of Massive Haemorrhage Policy (ABUHB/Clinical/0576) on the ABUHB Intranet

12.3 Reduced Supply of Blood: (SHS 17: c)

a. Occasionally an acute or prolonged reduction in donations of blood to WBS results in an Amber or Red Alert to Hospital Blood Banks
b. The Hospital Blood Bank Manager and Consultant Hamatologist will assess the local situation and if necessary implement the Blood Shortages Plan which may require the cancellation of elective surgery and other procedures in order to maintain stocks for life-saving transfusions
c. Full details of this plan are given in the Blood Shortage Clinical Management Plan (ABUHB/Clinical/0661) – each Directorate should have their own plans in place to ensure all relevant staff are aware of this plan and how to respond
13.0 **Special Transfusion Procedures: Cell Salvage (SHS 17: b, c)**

Cell Salvage includes the collection and re-infusion of the patient's own blood peri- or post-operatively. Designated staff must be responsible for the equipment and procedures used. An Operational Group meets to oversee all aspects of Cell Salvage within ABUHB and reports regularly to the Hospital Transfusion Committee.

13.1 **Intra-Operative Cell Salvage (ICS) including post-operative transfusion of blood collected intra-operatively:**

- a. ICS is the peri-operative salvaging of the patient's blood which is washed and resuspended in saline for re-infusion if required
- b. There must be a Lead Clinician responsible for the ICS Policy
- c. Member of the Theatre Management Team is responsible for ensuring that there is appropriate management and facilitation of the ICS service including scheduled preventative maintenance and stock control procedures
- d. All staff who use ICS must be adequately trained and competent for their role.
- e. Transfusion of salvaged blood must be carried out according to the same Patient Identification, Communication and Documentation principles as Autologous transfusion including Prescription, Labelling and Adverse Event Reporting
- f. All ICS cases must be fully documented
- g. For accounting purposes and auditing of use across Wales, the appropriate returns of volumes processed and consumables used must be made to the Welsh Blood Service (WBS)
- h. Information on ICS should be made available to patients at pre-operative assessment

**Ref:** AAGBI Safety Guideline Blood Transfusion and the Anaesthetist, Intra-Operative Cell Salvage. [www.aagbi.org](http://www.aagbi.org)

13.2 **Post-Operative Cell Salvage via Wound Drain (PCS):**

- a. PCS is the post-operative collection and filtering of blood for re-infu
- b. Transfusion of PCS blood must be carried out according to the same Patient Identification, Communication and Documentation principles as Autologous transfusion including Prescription, Labelling and Adverse Event Reporting
- c. All staff engaged in PCS must be adequately trained and competent for their role.
- d. All PCS cases must be fully documented in the patient's medical notes
14.0 Transfusion outside the major District General Hospitals: (SHS 17: a)

14.1 Transfusion at Ysbyty Ystrad Fawr:

a. Ysbyty Ystrad Fawr is a Local General Hospital serving the Caerphilly County Borough area. It operates a Stock Blood Bank and an Issue Fridge under the overall control of the Blood Transfusion Manager at RGH.
b. Pre-compatibility testing of patient samples is carried out at the Blood Transfusion Laboratory in RGH. Following strict Remote Issue Procedures Red cell units are selected and issued locally by BMS staff at YYF during their routine working hours.
c. A small stock of FFP is kept at YYF but Platelets are not stored on site.
d. Outside routine hours, and occasionally at other times, labelled, blood components are transported from RGH directly to the clinical area at YYF.
e. Close links between YYF and RGH staff and operation under a common Quality Management System ensure consistency and continuity of service.
f. All transfusions at YYF are subject to the same Safe Transfusion Principles detailed above (Section 6)

14.2 Transfusion at other ABUHB Hospitals where there is no Blood Bank:

a. Transfusion at Community Hospitals must only occur when there are sufficient trained and competent staff to ensure patient safety.
b. Appropriate measures must be in place to manage acute transfusion reactions including Anaphylaxis.
c. All transfusions are subject to the same Safe Transfusion Principles detailed above (Section 11)
d. Transport of components between the supplying Blood Bank and the Community Hospital must be under the control of the supplying Blood Bank in accordance with the All Wales Transfer of Blood Policy, comply with BSQR and drivers must have annual training in Good Manufacturing Practice (GMP)
e. Where possible the pre-collection checks should be carried out before arranging transport See Appendix I, p35
f. Normally, only one unit will be transported for any patient at any one time.
g. Appropriate medical assistance must be quickly available when transfusions take place.
h. Unused units must be returned immediately to the supplying Blood Bank using courier transport.
i. All Traceability documentation must be completed and returned to the supplying Blood Bank

14.3 Transfusion Service to non-ABUHB Hospitals:
a. A Service Level Agreement (SLA) must be in place between ABUHB and any other location to which blood components are supplied for transfusion
b. The SLA must specify the responsibilities and requirements of all parties involved in the provision of the transfusion service
c. All aspects of the transport, storage and administration of components must comply with Good Manufacturing Practice (GMP) and Safe Transfusion Principles as detailed in this Policy.

14.4 Transfer of Blood Components with patients within and outside ABUHB.

a. In exceptional cases patients may need transfusion support during transfer to a specialist centre within ABUHB or outside eg. Cardiff or Bristol.
b. These transfers must comply with the Transport of components between the supplying Blood Bank and the Community Hospital must be under the control of the supplying Blood Bank in accordance with the All-Wales Policy and Procedure for Transfer of Blood and Blood Components (v 4, 2011) which makes the following key recommendations:

1. Transfer of blood or components with a patient is required in exceptional circumstances only.
2. This should be reserved for patients who will need transfusing during the journey. Two units of blood should be sufficient.
3. The Transfusion Laboratory should co-ordinate the transfer of blood and ideally this will occur from laboratory to laboratory.
4. Blood should never be transferred without the knowledge of the transfusion laboratory or a Consultant Haematologist
Appendices

The Appendices provide detailed information and procedural steps for the following parts of the transfusion process which are current at the time of writing.

If you have any queries regarding the information given below please contact the Hospital Transfusion Team via the Transfusion Practitioners.

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Appendix A: Patient information & involvement (SHS 17: a)

A1 Patients or their carers / guardians must be given timely and appropriate information about any possible or definite transfusion procedure. Where this is not possible before the event it must be given as soon as possible afterwards.

A2 Competent patients should be encouraged to ask questions

A3 Various information leaflets are available from WBS or via the Transfusion Practitioners (e.g. “Will I need a blood Transfusion”, “Transfusion and Pregnancy”, “Will my baby need a transfusion”)

A4 Staff must be aware of this information and be ready to discuss any issues patients may have – referring them to medical or specialist practitioners if necessary.

A5 Any patient who has been transfused while unconscious must be informed as above before they are discharged. Currently, persons transfused since 1980 are no longer eligible to donate blood due to the risk of transmission of vCJD.

A6 Discharge summaries and letters must contain the fact that the patient has received a transfusion

A7 Delayed transfusion reactions are possible up to 28 days after transfusion. Patients and their GPs should be advised that if symptoms of haemolysis or infection occur they should seek specialist advice

For WBS patient information leaflets contact the Welsh blood Service at: 01443 622126
Appendix B: Clinical decision to transfuse (BCSH 2009) (SHS 17: a, b, c, d)

B1 The decision to transfuse must be based on a thorough clinical assessment of the patient and their individual needs. The rationale for the decision to transfuse and the specific components to be transfused should be documented in the patients’ clinical records. Appropriate alternatives to transfusion should always be considered eg. Iron therapy.

B2 The clinical assessment should include an evaluation of the patient’s age, body weight and concomitant medical conditions that predispose to Transfusion Associated Circulatory Overload (TACO): cardiac failure, renal impairment, hypoalbuminaemia and fluid overload. These factors should be documented in the patients’ clinical notes and should be considered when prescribing the volume and rate of the transfusion, and in deciding whether diuretics should be prescribed.

NB: the notion that one unit of red cells gives an increment of approximately 10g/L Hb can at best only be applied to a 70-80 kg patient.

B3 For patients identified at risk of TACO, a written request should be made that during the administration of blood components, specific attention should be given to monitoring the patient for signs of circulatory overload, including fluid balance. The rate of transfusion should be carefully assessed, as TACO can occur after only one unit of red cells in at risk patients.

B4 Paediatric transfusions should be prescribed in mls. This may also be appropriate for very low body weight adults, as may the use of smaller volume paediatric packs. This should be discussed with the hospital transfusion laboratory, and specific guidance given to the clinical staff administering these unfamiliar components. (See section 12.1 Paediatric Transfusion)

B5 The appropriate use of blood components is important for the care and benefit of the patient and also to preserve component stocks. Inappropriate requesting can introduce risk and error into the transfusion process and reduce availability of components for more appropriate cases. (See Algorithm for assessing appropriateness of requests for blood components: Appendix O3)

For detailed information on appropriate transfusion of blood components see:

BCSH Transfusion Guidelines: www.bcshguidelines.com
Handbook of Transfusion Medicine: www.transfusionguidelines.org
NCA Audit on Medical Use of Blood 2012

Guidelines for the appropriate use of Platelets & FFP - ABUHB/Clinical/0685

B6 Transfusion triggers can help to guide clinicians on whether or not to transfuse red cells. Current recommendations for adult red cell transfusions are:

<table>
<thead>
<tr>
<th>Hb</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 100 g/L</td>
<td>Probably does not require transfusion</td>
</tr>
<tr>
<td>70 – 100 g/L</td>
<td>May benefit from transfusion. (80 – 100 g/L for cardiac patients)</td>
</tr>
<tr>
<td>&lt; 70 g/L</td>
<td>Probably does require transfusion. (&lt; 80 g/L for cardiac patients)</td>
</tr>
</tbody>
</table>

NB: These are general guidelines. Always consider each case clinically.

B7 An indication of whether the transfusion achieved the desired effect (either post transfusion increment rates or improvement in patient symptoms) should be documented in the patient’s clinical records. In the absence of significant ongoing blood loss, further units should not be prescribed without monitoring the patients Hb. In patients with minor but ongoing blood loss, Hb should be regularly monitored, as a minimum after every 2-3 units of red cells.

B8 Strategies to be adopted by clinicians in massive haemorrhage and during periods of acute shortage of blood and platelets must be made available by each Directorate and understood by the clinical teams.

See also: Guidelines for the administration of blood components (BCSH 2009) and its Addendum (BCSH 2012)
Guidelines & addenda for Transfusion of Neonates; (BCSH 2004 and 2012)
Blood Shortage Clinical Management Plan - ABUHB/Clinical/0661
Appendix C: Discussion of reason for, risks, benefits and alternatives to Transfusion (SHS 17: a, d)

C1 Clinicians must be aware of and inform the patient of the reason for and the risks, benefits and alternatives to the transfusion.

C2 All discussions with patients and request for informed consent must comply with and be informed by the Mental Capacity Act and related ABUHB Policy.

C2 It should be presumed that the patient requires to be well informed of the risks, benefits and appropriate alternatives to their transfusion however it is a matter of clinical judgement how much information a patient should be given. Where a patient does not wish to receive the information offered this fact should be recorded in their clinical notes.

C3 Information leaflets covering a number of scenarios in which patients are likely to be transfused are available from the Welsh Blood Service. (01443 622126)

C4 Patients should be given the information leaflets as early as possible in the patient pathway – e.g. pre-assessment clinics.

C5 Where discussion of the risks and benefits is not possible prior to transfusion they must be discussed with the patient as soon as possible afterwards and before discharge.

C6 All discussion and information given should be clearly documented in the patient’s clinical record.

http://www.gmc-uk.org/guidance/ethical_guidance/consent_guidance_contents.asp

**BCSH Recommendation:** Patients (and/or those with parental responsibility for children) who may require a transfusion should have the reasons for and the risks, benefits and alternatives to transfusion explained to them. All information given, written and verbal, and consent to proceed should be clearly documented in the patient’s clinical record.
Appendix D: Informed Patient Consent / Refusal (SHS 17: a, d)
(Based on the Advisory Committee for Safety of Blood, Tissues Organs (SaBTO) * Recommendations 2011)

D1 Refer to ABUHB Policy on Consent (ABHB/Clinical/0004) for general policy on obtaining patient consent including guidance on the capacity to consent and treatment of children.

D2 Valid consent for blood transfusion should be obtained and documented in the patient's clinical record by the healthcare professional. Signed, written consent is not currently required.

D3 There should be a modified form of consent for long term, multi-transfused patients.

D4 Patients may refuse treatment or change their mind about prior consent. Some may have an Advance Directive or refuse specific blood components. These decisions should be documented in the patient’s clinical record and communicated to all relevant healthcare professionals.

D5 In emergencies, and unless the patient explicitly refuses transfusion or an Advance Directive exists (see D.1), transfusion that is considered to be in the patient's best interests should be carried out and the decision documented in the patient’s clinical record.

D6 Consent to the taking of blood samples for pre-transfusion testing is included as part of the venepuncture procedure which should only be performed if a valid request form is available.

Retrospective Information (SaBTO 2011)

D7 The provision of retrospective information for patients who were not able to give valid consent prior to a blood transfusion is important for three main reasons:

  A. To ensure patients are aware of the treatment they have received and informed of any associated potential risks relating to transfusion
  
  B. To ensure patients who have received a transfusion know that they are no longer eligible to donate blood. Patients who are not aware that they have received a transfusion may subsequently go on to donate when they should not
  
  C. To reassure some patients who may think that they have received a transfusion, for example during surgery, when they have not.

D8 Patients who have received a blood transfusion (red cells, platelets, fresh frozen plasma, cryoprecipitate or granulocytes) and were not able to give valid consent before the transfusion should be provided with retrospective information.
Fig. 2: SaBTO Guidance on Consent.

SaBTO
Advisory Committee on the Safety of Blood, Transplantation and Organ

GUIDANCE FOR CLINICAL STAFF
TO SUPPORT PATIENT CONSENT FOR BLOOD TRANSFUSION

Patient may require Blood / Blood Component Transfusion

Patients receiving a blood transfusion (red cells, platelets or plasma) whether for a medical or surgical cause should be informed of the indication for the transfusion including risks, benefits and alternatives. A record of this discussion should be documented in the patient’s clinical records.

Ideally the decision to transfuse should be made with the patient or parent/carer in advance of any planned transfusion.

In the emergency setting, the information will need to be given retrospectively.

Prospective Information

Valid consent* should be obtained prior to any planned transfusion and documented in the patient’s clinical record.

*Valid consent entails the provision of information on risks, benefits and alternatives available before asking the patient to give consent. This does not have to include a signature from the patient.

Retrospective Information

Patients treated in emergency setting where it was not possible to obtain valid consent pre-transfusion.

Patients who were told pre-procedure (e.g. pre-operatively) that they might require a transfusion then need to be informed whether they did or did not receive a transfusion.

Key issues to be discussed when obtaining valid consent

1. The following information should be discussed:
   o Type of blood / blood component
   o Indication for transfusion
   o Benefits of the transfusion
   o Risks of transfusion
   o Possible alternatives to transfusion
   o How the transfusion is administered and the importance of correct patient identification
   o Inform patient that following a blood transfusion they can no longer be a blood donor

2. Provide written information.
3. Check if patient needs time to consider or requires further information.
4. Document the discussion in the patient’s clinical records.

At discharge

1. If patient has had a transfusion, ensure that they have been informed.
2. Record information about the transfusion in the discharge summary, also stating that the patient has been informed.

Version 1.1

December 2011
Appendix E: Prescription / Authorisation of Transfusion and Requests to Blood Bank: (SHS 17: a, b, c, d)

E1 Under Regulation 25 of BSQR (SI 2005 No 50 as amended) section 130 of the 1968 Medicines Act has been amended to the effect that blood components are no longer legally defined as medicinal products. Therefore, in addition to medical practitioners, appropriately trained and competent registered practitioners may now order, authorise and administer blood.

E2 Although the term ‘prescription’ no longer legally applies to blood components it is still customary to refer to their prescription. Authorisation is the more correct alternative. With respect to blood component transfusion, prescription means, ‘the written authorisation or instruction to administer blood components’.

E3 To prevent communication or transcription errors the prescription should be documented by the registered practitioner making the decision to transfuse.

E4 For red cells, platelets and fresh frozen plasma the All Wales Transfusion Record (AWTR) should be used as a checklist for and recording of, their prescription and administration. Anti-D and other plasma derivatives should still be prescribed on the All Wales Drug Chart. However, the AWTR may be used to record details of the transfusion and the Traceability documents.

The Transfusion Record should include the following:

- Patient core identifiers
- Date transfusion is required
- Type of blood component to be administered
- Any special transfusion requirements eg. Irradiated, CMV negative, use of blood warmer (See Appendix H: sections 12 & 13)
- Number of units (exact volume in mls for paediatric transfusions)
- Time to be transfused (rate or exact length of time for paediatric transfusions) see E7 below.
- Signature of person administering the component

E5 “Blood” is not acceptable as a description of the component. Standard terms or abbreviations should be used eg. red cells, platelets, FFP.

E6 The Recommended Infusion rate for Red Cells in adults is 2 – 3 hours.

E7 Component transfusion must be completed within 4 hours of removal from controlled storage therefore a transfusion rate of 4 hours is not feasible given the time required for collection and pre-transfusion checks.

E8 The Request for Transfusion is the formal communication to the blood transfusion laboratory to prepare and issue the required components.

E9 Requests for Transfusion must be appropriate and made by trained, competent and authorised practitioner whose signature and identity must be clearly stated on the Transfusion Request Form with a contact number. See example of Request Form on next page

E10 The time required / urgency of the request must be clearly stated along with any Special Requirements and High Risk status of the patient.

E10 Where a verbal request for components is made subsequent to a Group & Screen request having been sent, a telephone request is acceptable as long as the sample is still valid and the identity of the requester is clearly communicated.

E11 A national Zero Tolerance Policy is in place for the acceptance or rejection of transfusion requests. All Patient core ID details must match on the signed sample and form and ID confirmation section of the form must be signed by the person who obtained the sample.

See: Transfusion Sample Acceptance / Rejection Policy ABUHB/Clinical/0269
**Fig. 3: Example of All Wales Transfusion Record Form (Introduced 2014)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Component or product</th>
<th>Rate / Duration</th>
<th>Concomitant medication required?</th>
<th>Authoriser Print Name</th>
<th>Authoriser Signature</th>
<th>Initial unit as given</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>Yes / No</td>
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<td>Yes / No</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4. PRE-ADMINISTRATION CHECKLIST:** *Must be completed for EACH UNIT by the person administering the transfusion. DO NOT PROCEED IF DISCREPANCIES ARE DETECTED*

- Pre-authorisation checklist and written authorisation fully completed and correct
- Check for concomitant medication (if indicated) and administer as prescribed
- Special requirements met if specified (Irradiated, CMV Neg)
- Valid expiry date
- Visual check - leaks/discolouration/clumping
- Blood group printed on compatibility label checked with blood group on front of bag
- Unique donation number on compatibility label matches donation number on front of bag

**5. FINAL BEDSIDE CHECK:** *Must be completed AT BEDSIDE for EACH UNIT by the person administering the transfusion. DO NOT PROCEED IF DISCREPANCIES ARE DETECTED*

- Legible identification band (or approved alternative) attached to patient
- CONFIRM: ALL patient identifiers are correct and identical (verbal ID, wristband and blood label)

By signing below I confirm that I have completed the required pre-administration and final bedside checks

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>Unit 2</th>
<th>Unit 3</th>
<th>Unit 4</th>
<th>Unit 5</th>
<th>Unit 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All Wales Transfusion Record (AWTR12) Dec 2013

Version 8
<table>
<thead>
<tr>
<th>PATIENT NAME:</th>
<th>NHS/Hosp No</th>
</tr>
</thead>
</table>

**Complete this chart for each unit transfused. Use the National Early Warning Score (NEWS) Chart if deviations from baseline are noted.**

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>Date:</th>
<th>Observation Interval</th>
<th>Temp</th>
<th>Pulse</th>
<th>Resps</th>
<th>BP</th>
<th>Time</th>
<th>Initial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where used, attach adhesive portion of blood label here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If not available record the unique 14 digit donation number</td>
<td></td>
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**Adverse Reactions:** In the event of an adverse reaction or any adverse symptoms associated with the transfusion please complete below.

<table>
<thead>
<tr>
<th>Was the adverse reaction documented in the patient's medical notes?</th>
<th>YES / NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you reported the reaction to the transfusion laboratory / practitioner?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>Write down the donation number of the unit being transfused at the time (if known)</td>
<td></td>
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</table>
Appendix F: Pre-Transfusion Sampling (BCSH 2011) (SHS 17: a, d, e)

Wrong Blood In Tube (WBIT) events are estimated to occur approximately every 1:2000 samples. These can result in an ABO incompatible blood transfusion which is a DoH ‘Never Event’ and may be fatal if undetected. Strict and consistent adherence to standard procedures and being alert to the possibility of anomalies indicating previous error is required to prevent what is an avoidable serious adverse event. See G3.b and See SHOT poster page 59.

F1 Samples should only be taken by trained and competent staff following the patient identification procedures detailed in Section 5.1
F2 All identity checks, sampling and labelling procedures must take place at the patient’s bedside
F3 Sample bottles must not be pre-labelised or handed to another person for labelling.
F4 Collect the sample into the appropriate bottle using an authorised venepuncture technique.

**NB:** Haemolysed, clotted or insufficient samples cannot be tested and will result in avoidable delay as a repeat sample will be required.
F5 Once collected, the sample must be hand-labelled clearly and legibly and signed using a non-smearing pen by the person who collected it. Do not label a sample someone else has taken.
F6 Using standard abbreviations for address eg Street (St), Terrace (Tce) etc on the sample is acceptable.
F7 No amendments will be allowed once the sample has been sent to the laboratory.
F8 The central portion of the request form must be signed by the person who took the sample to confirm that they have correctly identified the patient.
F9 Where a sample is deemed unsuitable or invalid for testing the requestor will be notified by a means appropriate to the stated urgency of the request.
F10 Where samples are rejected and blood components are required urgently only group O red cells will be issued until a valid sample can be fully tested.
F11 The **Timing** of the pre-Transfusion sample is dependent on the patient's Transfusion History. (BCSH 2012) see Table 2.

**Table 2: Timing of the pre-Transfusion sample**

<table>
<thead>
<tr>
<th>Patient’s Transfusion History</th>
<th>Sample is valid for</th>
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</thead>
<tbody>
<tr>
<td>Transfused or pregnant within last 3 months</td>
<td>3 days prior to transfusion</td>
</tr>
<tr>
<td>Transfused or pregnant more than 3 months ago</td>
<td>7 days prior to transfusion</td>
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</table>

Any deviation from this guidance must be supported by a risk assessment carried out by a Consultant Haematologist.
Appendix G: Pre-Transfusion Testing (BCSH 2012) (SHS 17: a-e)

G1 The pre-Transfusion Testing of samples is carried out in the Blood Transfusion Laboratory according to national guidelines and in compliance with the principles of Good Manufacturing Practice (GMP) as required by BSQR. A Quality Management System (QPulse) is in place which controls all aspects of GMP and is monitored by laboratory Quality Officers and senior staff.

G2 Abusive and threatening phone calls to laboratory staff will not improve already stressful situations. Such calls are monitored and will be reported through the ABUHB Incident reporting system. (BCSH Pre-Transfusion Testing (2012), NCA Sampling Audits (2012))

G3 Group and Screen (G&S) determines the patient’s ABO and Rh(D) group and whether any clinically significant irregular antibodies are present. All G&S testing is automated although manual testing is used for check groups when required (eg provision of group specific blood in emergencies).

G3 Electronic Issue (EI) is the release of ABO/Rh compatible red cells under the following circumstances:

a. The patient has a previous historical group which matches the results of the current valid sample
b. No irregular antibodies have been detected at any time

c. The group and screen result has been produced via a fully validated and quality controlled automated system for analysis and reporting
d. Issue of components is controlled by the IT system with robust barriers to prevent EI if conditions have not been met.
e. There is no other reason why the patient is ineligible for Electronic Issue.

If all these conditions for EI have been met red cells can be made available within 5-10 minutes.

G3.b Group Check sample for EI:

An undetected WBIT event can result in an ABO incompatible transfusion under the EI procedures. In order to mitigate this risk current national guidance states:

“Unless secure electronic patient identification systems are in place, a second sample should be requested for confirmation of the ABO group of a first time patient prior to transfusion, where this does not impede the delivery of urgent red cells or other components.” (BCSH 2012)

This has been accepted by the HTC and implementation agreed by the Medical Director.

It is intended to implement this as soon as possible in 2014 following the necessary change control and updating of laboratory procedures.

Information for clinical staff is available on the Intranet and notice of the change will be published prior to implementation. (See SHOT WBIT Poster Appendix P4, p59)

Please note: every effort should always be made to provide valid transfusion samples as requested by blood bank in order to minimise inappropriate use of Group O red cells.

G4 Serological Cross-Match is currently used only for patients who are ineligible for EI. It involves the physical mixing of donor red cells with patient plasma to identify any incompatibility. The test is non-automated and can take at least 45 minutes.

G5 Referral to WBS may be required in some cases eg. where the patient has a mixture of antibodies.

G6 While every effort is made to provide compatible blood in the time required individual cases can present challenges which may result in a significant delay. Clinical staff will be kept informed of progress and Consultant Haematologists are always available to discuss options.
Fig. 4: The All Wales Transfusion Request Form:

Sections A and C must be completed by an authorised person who is requesting the test.

A valid Addressograph may be used in Section A.

Section B must be completed by the person who has taken the sample.

Sections C must contain a valid reason and date required for transfusion if requested.

If request is urgent the Blood Bank should also be telephoned.
Fig 5: Algorithm for assessing appropriateness of requests for blood components.

### Telephone Request

1. **Patient Actively Bleeding**
   - **Yes**
     - Is there a valid sample?
       - Yes: Supply group compatible blood, followed by cross-matched blood as soon as possible.
     - No: In an emergency use O Rh(D) Negative
       - Request new sample
   - No: Inappropriate Request

2. **Is Patient actively bleeding?**
   - No: Is the Transfusion appropriate according to ABUHB Transfusion Policy / NBTC indication codes
     - Yes: Is there a valid sample?
       - Yes: Accept Request
       - No: Request new sample

3. **Inappropriate Request**
   - Discuss with requestor and refer to Transfusion Lab Manager / Haematologist / Transfusion Practitioner as required.

**NB:**

For all requests where there is no acceptable historical blood group on the patient a 2nd sample will be required unless this compromises patient safety.

Only group O will be made available until the patient’s ABO group has been confirmed.

(BCSH 2012)
Appendix H: Component Storage, Selection & Issue. (SHS17: a-e)

H1 Component handling and storage is regulated by the BSQR and controlled by the Laboratory Quality Management System which complies with the Principles of Good Manufacturing Practice.

H2 Components are stored under strict and monitored conditions in order to maintain quality, optimum stock levels and assure patient safety.

H3 Laboratory BMS staff who work in Blood Bank must be trained and competent for their role in accordance with HCPC and BSQR regulations. They are responsible for the appropriate storage, testing and selection of compatible components for issue.

H4 Special Requirements must be met wherever possible:

- **Irradiated Components:** (See H12)
- **CMV Negative Components:** (See H13)
- **R, R, Kell Negative red cells:** for females of child bearing potential (age 4 mths to 50 yrs) with c type = negative or unknown
- **Treated FFP / Octaplas:** for patients born after 1 January 1996
- **Antigen compatible:** for patients with clinically significant antibodies

H5 Concessionary Release of components may be required in situations where the normal procedure cannot be followed. These will be sanctioned by a Consultant Haematologist and the requesting physician will need to take responsibility for their transfusion. This will be fully documented and reviewed by the Hospital Transfusion Team.

H6 Recall of Components will be carried out as soon as staff are notified of the requirement either through the internal Quality System or by an external supplier.

H7 Blood Components are issued with a reservation period which is usually 24 hours but will be subject to factors such as patient transfusion history, component expiry, supply status etc.

H8 A stock of O Rh(D) Negative, Kell Negative units is kept available for immediate collection on the responsibility of the requesting clinician. However, these may be incompatible if the patient has clinically significant, irregular (non-ABO) antibodies.

H9 The laboratory participates in the UK Blood Stocks Management Scheme (BSMS) and every effort is made to reduce avoidable wastage through the maintenance of optimum stock levels.

H10 Avoidable wastage is logged and when appropriate, reported as a serious adverse event.

H11 Acute Blood Shortages occasionally occur during which there is daily communication between WBS and the Blood Bank.

- **H11.1** When necessary, the Blood Bank Manager and Consultant Haematologist will declare an Amber or Red Alert to the Hospital signifying an acute shortage of Blood or Platelets which necessitates strict conservative strategies to be put in place including cancellation of non urgent surgery.

- **H11.2** Clinical Directorates must have an agreed action plan to manage any declared Amber or Red Blood Shortage Alerts.

- **H11.3** Final arbitration during these alerts will be between the Medical Director and Consultant staff at WBS

H12 Note on the use of group O red cells:

Where group O red cells are issued in an emergency it is important that a valid pre-transfusion sample is taken before transfusion whenever possible. This ensures that pre-transfusion testing is not compromised by the transfused blood.

Group O red cells are limited in availability therefore they must be used appropriately and will be prioritised for women of child-bearing potential.

During times of acute shortage Group O Rh(D) Positive red cells may be given to O Rh(D) Negative males and women past child bearing potential as long as they are compatible. Group O red cells Rh(D) Negative or Positive red cells are not 100% compatible for every patient, however they are the only blood group that can be given to a patient whose ABO / RH(D) group is unknown or not immediately available.
H13: Special Requirements: Irradiated blood components: (BCSH 2010) (SHS17: a,d,e)

H13.1 Patients at risk of TA-GvHD should be made aware of their need for irradiated blood components and be provided with appropriate written information and an alert-card for clinical staff.

H13.2 Clinicians must ensure that if referring patients their special transfusion requirements are fully documented.

H13.3 It is the clinician’s responsibility to notify the Blood Bank on each occasion that irradiated components are required.

Table 3: Indications for Irradiated Components:

<table>
<thead>
<tr>
<th>Indications for Irradiated Components</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Patients with Hodgkin’s disease</td>
<td>At all stages of the disease</td>
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<tr>
<td>Patients treated with Purine analogues</td>
<td>Eg. Fludarabine, clofarabine, cladribine, deoxycoformycin</td>
</tr>
<tr>
<td>Patients receiving some specific antibody therapies</td>
<td>Ie. Alemtuzumab (but not rituximab)</td>
</tr>
<tr>
<td>Patients receiving allogeneic haemopoietic stem cell grafts (HSC)</td>
<td>From the start of conditioning therapy and while receiving Graft v Host Disease prophylaxis</td>
</tr>
<tr>
<td>Allogeneic HSC donors</td>
<td>If transfused before or during the harvest of their Stem Cells</td>
</tr>
<tr>
<td>Patients who will have an autologous HSC graft</td>
<td>Any transfusion within 7 days of harvest of their Stem cells Any transfusion from start of conditioning therapy until: 3 months post transplant 6 months post transplant if conditioning total body irradiation (TBI) has been used</td>
</tr>
<tr>
<td>Patients with Aplastic Anaemia</td>
<td>If treated with Anti-Thymocyte Globulin (ATG)</td>
</tr>
<tr>
<td>Patients receiving HLA selected platelets</td>
<td>All platelets from WBS are now irradiated</td>
</tr>
<tr>
<td>All Intra Uterine Transfusions (IUT) and for at least 6 months following EDD.</td>
<td>Red cells for IUT or ET must be &lt; 5 days old when irradiated and transfused within 24 hrs of irradiation</td>
</tr>
<tr>
<td>All Exchange Transfusions (ET)</td>
<td>Provided that irradiation does not unduly delay transfusion – subsequent transfusions should be irradiated until 6 months after EDD</td>
</tr>
<tr>
<td>Some Neonates</td>
<td>Only if there has been a previous IUT or if blood is from a 1st or 2nd degree relative</td>
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<tr>
<td>Patients receiving granulocyte transfusions</td>
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<tr>
<td>Patients receiving blood from 1st or 2nd degree relatives</td>
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<tr>
<td>Patients with congenital immunodeficiency with defective cell mediated immunity</td>
<td>Eg. Severe combined immunodeficiency (SCID) Di George Syndrome Wiskott Aldrich syndrome Ataxia Telangetasia Chronic Mucosal Candidiasis MHC class 1 or 2 deficiency</td>
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H13.4 Except where stated above (IUT & ET) red cells need to be < 14 days old when irradiated and expire 14 days after irradiation.

H13.5 Where a patient is at particular risk from hyperkalaemia, red cells should be transfused within 24 hrs of irradiation due to the higher level of extra-cellular potassium.

H13.6 The BCSH guidelines are currently under review. Refer to the latest version for up to date guidance. www.bcshguidelines.com
H14:  **Special Requirements:**  **CMV Negative components:**  (Summary of the Advisory Committee on the Safety of Blood, Tissues and Organs (SaBTO) Guidance 2012)

a) CMV seronegative red cell and platelet components should be provided for intra-uterine transfusions and for neonates (ie up to 28 days post expected date of delivery), and therefore all small sized blood packs and other cellular blood components intended for neonates should be provided as CMV seronegative.

b) Granulocyte components should continue to be provided as CMV seronegative for CMV seronegative patients.

c) CMV seronegative blood components should be provided where possible for pregnant women, regardless of their CMV serostatus, who require repeat elective transfusions during the course of pregnancy (not labour and delivery). This mainly applies to patients with haemoglobinopathies who are managed in specialist centres. However CMV seronegative blood components are not expected to be generally available in all hospitals and therefore for emergency transfusions in pregnant women, leucodepleted components are recommended.

d) All blood components (other than granulocytes) in the UK now undergo leucodepletion, which provides a significant degree of CMV risk reduction. This measure is considered adequate risk reduction for all other patients requiring transfusion (haemopoietic stem cell transplant patients, organ transplant patients, and immune deficient patients, including those with HIV) without the requirement for CMV seronegative components in addition.

e) CMV Polymerase Chain Reaction (PCR) monitoring should be considered for all haemopoietic stem cell and solid organ transplant patients (even CMV negative donor/negative recipients) to allow early detection of any possible CMV infection (whether transfusion-transmitted or primary acquired infection).

f) Transfusion-transmitted CMV infections should be reported via the SHOT (Serious Hazards of Transfusion) and SABRE (Serious Adverse Blood Reactions & Events) systems.

*The report of the SaBTO CMV Steering Group may be found at:*
Appendix I: Preparation for Component Collection. (SHS 17: b, c, d)

Significant numbers of blood components have been wasted because of delays in transfusion due to problems in the clinical area which should have been resolved before they were requested.

The following checks should be made **BEFORE** asking for components.

I1 The Transfusion Record contains a valid prescription including the need for any Special Requirements

I2 The Patient is available and prepared for the transfusion and is wearing a valid and legible ID Band or authorised equivalent

I3 The reason for the transfusion has been explained to the patient and informed consent obtained and documented in the clinical notes

I4 There is patent venous access. The type of catheter used must be appropriate for the rate of transfusion prescribed

I5 There are sufficient suitably trained and competent staff available for the duration of the transfusion

I6 The pre-transfusion (baseline) observations have been completed within 60 minutes of the commencement of the transfusion and do not prevent the transfusion proceeding

I7 Where more than one unit for a patient is required the lab has been contacted to arrange appropriate transport

I8 If a massive haemorrhage event, a lead communicator has been designated to co-ordinate communication with Blood Bank and other support services

I9 Once the above requirements have been met and patient and staff are adequately prepared for the transfusion the component may be collected from the Blood Bank as described in Appendix J below
Appendix J: Collection, Delivery and Return of Blood Components (SHS17: a-e)

REGULATORY REQUIREMENT
Only staff who have up to date training and competency records are authorised to access and remove blood components from controlled storage areas and deliver them to and from the clinical area.

BSQR (2005) as amended

J1 Most collections of blood components are by authorised porters but there are a limited number of other staff who are authorised to collect for their own department.

J2 Written details including the patient’s core identifiers, location and type of component must be taken by the collector to the Blood Bank. The degree of urgency should also be communicated to ensure the appropriate priority is given to the collection.

J3 Ideally, the person requesting collection should be available to receipt the component when it is delivered.

J4 Telephone requests to authorised collectors must be immediately transcribed onto the ABUHB Collection and Return Log Books provided for the purpose. All details must be checked with the caller and where possible a contact name recorded. The collector may ask to speak to a different member of staff for clarity if necessary.

J5 The degree of urgency must be stated to assist in prioritisation of the request.

J6 On receipt of the request the collector must proceed with minimal delay to the storage area

J7 Where access is controlled by Swipe Badge and/or Personal Codes these must not be shared between staff. This is a disciplinary offence.

J8 Blood components must be transported in the appropriate container to preserve patient confidentiality and maintain component quality.

J9 Where an IT system is used to control release of components – the following checks are still required to ensure the correct component is collected.

J10 Collection of components is a critical task in the transfusion process and requires the following steps:

ANY DISCREPANCIES IN DOCUMENTATION OR OTHER ANOMALY MUST BE NOTIFIED TO LABORATORY STAFF IMMEDIATELY

J10.1 Collector has the appropriate written documentation with patient core identifiers and checks Issue Register for the correct patient entry.

J10.2 Details in the Issue Register are checked against documentation / Log Book.

J10.3 The Correct Component is selected from the appropriate storage location and patient details on Traceability Tag are checked against documentation and Log Book. The donor number is checked against the label on the unit and the Issue Register.

J10.4 If all details match exactly and component quality and expiry is acceptable the collector signs the Issue Record and enters date and time of removal.
J10.5 The appropriate transport container is used. If a transport box is required the laboratory staff will provide additional documentation. See J.18 below.

J10.6 The component is delivered to the clinical area without delay and handed over to a qualified member of staff who must check it for quality and suitability before signing the log book.

J10.7 Collection documentation / Log books must be retained for audit.

J11 Exceptional Circumstances: There may be occasions in life-threatening emergency scenarios when trained staff are not available to collect blood components.

If untrained staff are sent to collect blood they must be given the patient’s core details in writing and the blood bank must be informed that untrained staff will be collecting the units.

Untrained staff must not look for the units themselves but must ask a member of Blood Bank to find the correct units for them.

The issue register must be signed, dated and timed by the BMS and countersigned by the collector.

The BMS should ensure that the correct transport methods are employed and instruct the collector to deliver the components without delay.

J12 In all circumstances if sufficient patient details are not provided only emergency O neg units will be issued on the responsibility of the requesting clinician.

Return of unused components:

J13 Unused units in the clinical area present a risk as they may be transfused to the wrong patient.

J14 All staff must be vigilant in ensuring that blood components or component transport boxes are not left in the clinical area but returned to the Blood Bank as soon as they are no longer required.

J15 Where blood is often received in transport boxes a member of staff must be designated to be responsible for the components and their return if unused.

J16 When returning components to Blood Bank do not leave them for routine collection. Call for an authorised porter who is trained to return components safely.

J17 Returns from off site locations should be discussed with the Blood Bank so that the most appropriate arrangements can be agreed.

Prevention of Avoidable Wastage of Blood Components: Use of Blood Transport Boxes

J18 Avoidable wastage in the clinical area, particularly of red cells, is a significant problem and the following wastage reduction strategy has been introduced across ABUHB:

J18.1 Requests for more than 1 unit per patient at one time must be clinically justified and may be queried by Blood Bank staff.

J18.2 Where 2 units are requested for a patient who is bleeding both units may be transported at room temperature – on the assumption both will be transfused within four hours. Discuss with Blood Bank.

J18.3 Only on rare occasions should more than 2 units at a time be required. Where this is ‘clinically necessary’ the components will be sent in sealed validated transport boxes each up to 4 units.
J18.4 **External documentation** accompanying the box will identify the patient to avoid clinical staff opening the box to check contents.

J18.5 Once in the clinical area component safety is the responsibility of the designated staff who must complete (Name, Date & Time) the Box Received section of the Transport Form and ensure that the box, any unused units and traceability documentation are returned to the Blood Bank within the appropriate timescale.

J18.6 The Box Opened section must be completed (Name, Date & Time) by the person who breaks the seal.

J18.7 Requests for ‘Just in case’ scenarios should be discussed with the laboratory in advance so that appropriate preparations can be made.

J18.8 Massive Haemorrhage Packs will always be made available as per the Massive Haemorrhage Toolkit but the 6 units of red cells may be transported in more than one box to reduce the possibility of wastage.

J18.9 Co-operation of clinical staff is necessary to reduce and avoid wastage of precious blood components. Only the designated Lead Communicator should contact Blood Bank to avoid repetitive phone calls etc.

J18.10 Clinical Areas which use transport boxes frequently must have an action plan which details who is responsible for monitoring the time the box is in the area and making arrangements for their timely return / replenishment in order to reduce the risk of transfusion of unsafe components and wastage.

J18.11 Any requests for components which are suspected of being inappropriate or wasteful will be audited and may be referred to Risk Management.

J19 Unused, uncontrolled and unsafe blood components in the clinical area constitute a risk to patients. It is a legal requirement that such events are reported to the MHRA.
Appendix K:  Component Receipt and Administration (SHS 17 : a,b,d,e)

The final identity check before administering the component is a Critical Step and the last chance to identify any errors or discrepancies in patient identity or documentation. Managers are responsible for ensuring that all relevant staff are suitably trained and competent to perform this procedure.

SHOT Reports (1996 to 2011)
NPSA SPN 14 (2006)

K1 For non-boxed units - before signing the Collection Log Book to accept responsibility:

K1.1 Check the component for quality and suitability for the right patient:

expiry date
damage to pack
discolouration or other sign of deterioration
suitability for the intended patient (type of component, patient identity, blood group)

K1.2 Any query about the quality or suitability of the component must be resolved before proceeding with the transfusion. Consideration must be given to returning the component to Blood Bank in order to avoid wastage.

K1.3 If all checks are satisfactory the Collection Log Book should be signed and the transfusion commenced without delay.

K2 For units delivered in a Transport Box:

K2.1 Check the external documentation for Patient Identity & Component Type

K2.2 If satisfactory, receipt the box using the accompanying form and and sign the Component Collection Log.

K2.3 Ensure that a designated member of the clinical team is responsible for the control of the box and its return (See J18)

K3 Locate and follow the pre-Administration checklist in the All Wales Transfusion Record

K4 The pre-Administration checks and Administration procedure must all be completed at the patient’s bedside as one continuous uninterrupted process. The component, equipment and documentation is taken to the bedside. (See Administration guidance p 40).

K5 Approach the patient and, if alert, confirm with them their understanding of the transfusion and explain the procedure answering any questions they may have

K6 All patients being transfused must be wearing a valid ID Band or authorised alternative

K7 Perform Positive Patient Identification (Section 6.1). All patient core identifiers must match exactly the ID Band and documentation on the blood component label. Sign the Transfusion Record to confirm you have checked patient identity.

K8 If two persons are involved in the pre-Administration checks they must do so independently of each other
K9 Attach the giving set to the component and set the prescribed rate. NB: Administration must be completed within a maximum of 4 hours of removal from controlled storage.

K10 Units must be discontinued if they are still running at midnight of the day of expiry or have been up for 4 hours after removal from controlled storage.

K11 Observe the component flow into the patient and record the Start Time on the Transfusion Record.

K12 Perform the patient observations as detailed in Appendix M.

K13 When the Transfusion is completed Record the Stop time of the Transfusion on the Transfusion Record.

K14 Record the Post-Transfusion observations on the Transfusion Record.

K15. The same post-transfusion observations may be used as the pre-transfusion observations of a subsequent unit as long as they are made within the same 60 minute time frame.

K16 Completed units (empty bags) should be retained until all the units of a particular transfusion episode have been transfused and patient observations are satisfactory. If there is no indication of a reaction they may be disposed of appropriately in clinical waste.

K17 If an adverse reaction is suspected the transfusion must be stopped and medical advice sought.

K18 Consultant Haematologist should be contacted for advice.

K19 All bags (current and previous) associated with the transfusion episode should be retained for investigation by Blood Bank.

K20 See Appendix M for detailed management of serious adverse reactions.
Guidance on the Administration of Blood Components & Products:
(Taken from NHS BT Transfusion Liaison Team 2009)

NB: All blood components (excluding granulocytes) in the UK are leucocyte depleted within 48 hours of collection to minimise the theoretical risk of transmission of vCJD.
No supplemental micro aggregate filters are required for any blood component transfusions (including granulocytes)

<table>
<thead>
<tr>
<th>Component / Product</th>
<th>Instructions for Adult Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Cells</td>
<td>✓ 170 - 200 micron filter is required (standard blood administration set)</td>
</tr>
<tr>
<td></td>
<td>✓ Either gravity or electronic infusion pumps may be used. Electronic infusion pumps should only be used if the manufacturer verifies them as safe for that purpose.</td>
</tr>
<tr>
<td></td>
<td>✓ The transfusion must be completed no more than 4 hours after the component has been removed from temperature controlled storage.</td>
</tr>
<tr>
<td>Platelets</td>
<td>✓ 170 - 200 micron filter is required (either a blood or platelet administration set may be used).</td>
</tr>
<tr>
<td></td>
<td>✓ Platelet concentrates should not be transfused through administration sets which have already been used for blood.</td>
</tr>
<tr>
<td></td>
<td>✓ Platelet administration sets have a smaller priming capacity than a blood administration set.</td>
</tr>
<tr>
<td></td>
<td>✓ A unit of platelets is usually administered over 30 minutes.</td>
</tr>
<tr>
<td>FFP (Fresh Frozen Plasma)</td>
<td>✓ 170 - 200 micron filter is required - (blood administration set)</td>
</tr>
<tr>
<td></td>
<td>✓ Once thawed, FFP must not be re-frozen and should be transfused as soon as possible as post-thaw storage will result in a decline in the content of labile coagulation factors.</td>
</tr>
<tr>
<td></td>
<td>✓ For products kept at 22 °C post thawing, the transfusion must be completed within 4 hours of thawing.</td>
</tr>
<tr>
<td></td>
<td>✓ For products stored at 4 °C in the blood transfusion laboratory post thawing, the transfusion must be completed within 24 hours of thawing.</td>
</tr>
<tr>
<td></td>
<td>✓ A unit of FFP is usually administered over 30 minutes.</td>
</tr>
<tr>
<td>Granulocytes</td>
<td>✓ 170 - 200 micron filter is required (standard blood administration set).</td>
</tr>
<tr>
<td></td>
<td>✓ The whole dose should be transfused over 1-2 hours.</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>✓ 170 - 200 micron filter is required (standard blood administration set).</td>
</tr>
<tr>
<td></td>
<td>✓ Once thawed, cryoprecipitate must not be re-frozen and should be used immediately. If delay is unavoidable, the component should be stored at ambient temperature and used within 4 hours.</td>
</tr>
<tr>
<td>Stem cells</td>
<td>✓ Administer using a standard intravenous fluid administration set.</td>
</tr>
<tr>
<td>Human Albumin Solution (HAS)</td>
<td>✓ 15 micron filter vented giving set (most standard intravenous fluid administration sets have a 15 micron filter).</td>
</tr>
<tr>
<td>I/V Immunoglobulin</td>
<td>✓ 15 micron filter vented giving set (some manufacturers supply a giving set in the product packaging).</td>
</tr>
</tbody>
</table>

Table 4: Guidance on the Administration of Blood Components and Products
Priming the line
The line must be primed to remove air before attaching it to the patient. It is unnecessary to prime with anything other than the blood component, however 0.9% Sodium Chloride may be used for this purpose. Dextrose should never be used in a giving set before or after blood, as it can cause haemolysis.

There are a variety of blood administration sets available. Manufacturers instructions for priming the line should always be followed.

Changing the administration set
If multiple units are being transfused, the administration set should be changed at least every 12 hours to prevent bacterial growth.

Some administration sets may be supplied with different instructions, or your hospital policy may vary. In these cases you should follow the manufacturer’s instructions or your hospital policy, as appropriate.

On completion of the transfusion
Flushing through the remainder of the blood in the line with 0.9% Sodium Chloride is unnecessary and is not recommended because it may result in particles being flushed through the filter. If another IV infusion is to take place after the blood transfusion, it is good practice to use a new administration set to reduce the risk of incompatible fluids or drugs causing haemolysis of any residual red cells which may be left in the administration set.

Drugs
Drugs must not be added to any blood component pack. It is generally advised that an infusion line that is being used for blood should not be used to administer any other drugs. Dextrose solution (5%) can cause haemolysis and must not be mixed with blood components. Calcium-containing solutions may cause clotting of citrated blood. The topics of compatible IV fluids and co-administration of drugs and blood components are currently under review by BCSH transfusion task force. (The Handbook of Transfusion Medicine 4th edition 2007)

Blood warmers
Hypothermia impairs haemostasis and reduces red cell oxygen delivery to the tissues. Rapid transfusion of blood at 4°C can lower the patient’s core temperature by several degrees. Cold blood infused faster than 100 ml/minute has been reported to cause cardiac arrest in adults.

Rapid infusion devices may be used when large volumes have to be infused rapidly. Rapid infusers usually incorporate a blood warming device.

Blood should only ever be warmed using a specifically designed commercial device with a visible thermometer and audible warning. Only CE marked commercial blood warmers should be used and the manufacturer’s instructions strictly followed. Some blood warmers are designed to operate up to and including 43°C but are safe, provided they are used and maintained according to manufacturers instructions.

Blood and blood components should not be warmed using improvisations such as putting the pack into hot water, in a microwave or on the radiator.

Fatalities have occurred due to haemolytic transfusion reactions and/or bacterial contamination of the blood component following the use of inappropriate blood warming procedures.
Paediatric administration
The principles are the same as for adult administration. Blood administration sets containing an integral 170-200 micron filter should always be used. Paediatric blood administration sets are appropriate for small volume transfusions. These come with an integral 3 way tap which can then be used to attach a syringe driver if required. The component bag should be left attached during the transfusion even if using a syringe driver.

It is vital for the doctor to specify both the volume in mls and the time over which the transfusion should take place when prescribing paediatric transfusions.

Intra Uterine Transfusions
Red cell preparations for Intra Uterine Transfusion (I.U.T) should not be transfused straight from 4°C storage. As no specifically designed warming system exists for the small volume of blood used for I.U.T any active warming must be carried out with great care and the blood product not exposed to temperatures more than 30°C.

Active warming may not be necessary if the blood component is removed from 4°C storage in a timely manner and the infusion is given at an appropriate rate.

References

BCSH 1999 Guidelines for the Administration of Blood and Blood Components & the Management of Transfused Patients. Transfusion Medicine 9, 227-239


Rennie I, Rawlinson PSM, Gray S. (2000). An Audit of Blood Warmers. Transfusion Medicine, 10, supplement 1, 36


The Royal College of Nursing (2004) Right blood, right patient, right time, RCN pub. code 002 306
Appendix L: Traceability (SHS 17: a,b,d,e)

Under BSQR the recording of Traceability is a legal requirement. A manual ‘Bag and Tag’ system is currently in use throughout ABUHB which requires clinical staff to manually confirm the transfusion of a specific component to a specific patient and return the Tag to the Blood Bank where they are scanned.

The full procedure is detailed below:

As soon as the Transfusion has commenced:

L.1 Tick the Commenced box on the blue bag
L.2 Record your name and the date and time on the blue tag and the red sticky label
L.3 Tear off the Blue Tag for placing in the collection box after you leave the bedside
L.4 Detach the red sticky label and affix to the rear of the Transfusion Record

If the bag is spiked but not transfused:

L.5 Tick the Not Given box and record your name, date and time as above
L.6 Affix the sticky label to the Transfusion Record and return the blue tag to the Blood Bank
L.7 Dispose of the donor bag and giving set appropriately – do not return to Blood Bank
L.8 Inform Blood Bank of the failure to transfuse and arrange a replacement if necessary
L.9 Report incident via Datix

Failure to provide Traceability:

L.10 Returned tags are scanned in the laboratory and staff are able to identify locations which have failed to provide Traceability information

L.11 A request for confirmation of transfusion will be issued to the Ward / Departmental manager for immediate action. The patient’s Transfusion Record should be located and the relevant sticky label identified. If this is present the details should be returned to Blood Bank by the most efficient means.

If the patient has been transferred to another department the responsibility for completion lies with the location where the transfusion was commenced. Managers must liaise with each other to ensure that the appropriate person completes the request without delay.

L.12 If the Traceability information cannot be located or there is no response to the request for confirmation a Notice of Loss of Traceability will be issued informing the manager that the legal requirement has not been met and copies will be sent to Clinical Leads and Risk Managers. A Datix report will also be raised.

L.13 All staff must understand the seriousness of failing to provide 100% Traceability on issued components.

ABUHB will be at risk of regulatory action and the Blood Bank will be at risk of losing its licence to operate if the required standard is not met to the satisfaction of the Competent Authority (MHRA).
Appendix M: Patient Observation and Management of Adverse Reactions

SHS17: a,d,e

Transfusion of blood components is not without risk and careful observation throughout the transfusion episode and beyond is required to identify and manage adverse reactions. For full guidance on the management of Acute Transfusion Reactions (ATR) refer to the BCSH Guidelines (2012) upon which this section is based.

See accompanying Flow Chart (Fig. 6, p48) and All Wales Guidance Chart (Fig. 7, p49).

M1 All patients should be transfused in clinical areas where they can be directly observed, and where staff are trained in the administration of blood components and the management of transfused patients, including the emergency treatment of anaphylaxis.

M2 Observations should be undertaken for every unit transfused. Minimum monitoring of the patient should include (BCSH 2009):

- Regular visual observation throughout the transfusion episode.
- Pre-transfusion pulse (P), blood pressure (BP), temperature (T) and respiratory rate (RR). These should be taken and recorded no more than 60 minutes before starting the transfusion.
- P, BP and T should be taken 15 minutes after the start of each component transfusion. If these measurements have changed from the baseline values, then RR should also be taken. More frequent observations may be required e.g. rapid transfusion, or patients who are unable to complain of symptoms that would raise suspicion of a developing transfusion reaction.
- If the patient shows signs or symptoms of a possible transfusion reaction, P, BP, T and RR should be monitored and recorded and appropriate action taken.
- Post-transfusion P, BP and T should be taken and recorded not more than 60 minutes after the end of the component transfusion.
- Patients should be observed during the subsequent 24 hours for (or, if discharged, counselled about the possibility of) late adverse reactions. 24 hour access to clinical advice should be made available.

M2 Although anaphylactic and haemolytic reactions can present after only a small volume of blood has been transfused, reactions can present much later, on occasion several hours after completion of the transfusion. Therefore, observation and monitoring is required throughout the transfusion episode and patients should be asked to report symptoms that develop during the next 24 h.

M3 Unconscious patients, or those unable to report symptoms, require direct monitoring.

M4 Patients should be asked to report symptoms that develop within 24 h of completion of the transfusion.

M5 In all cases of suspected reaction, the transfusion must be stopped temporarily and venous access maintained with physiological saline. The patient’s Airway, Breathing and Circulation (‘ABC’) must be assessed.

M6 The patient’s core identification details must be checked to ensure they correspond with those on the blood component compatibility label and the component must be examined for unusual clumps or particulate matter, or discolouration suggestive of bacterial contamination.
If a patient being transfused for haemorrhage develops hypotension, careful clinical risk assessment is required. If the hypotension is caused by haemorrhage, continuation of the transfusion may be life-saving. In contrast, if the blood component is considered the most likely cause of hypotension, the transfusion must be stopped or switched to an alternative component and appropriate management and investigation commenced.

Initial treatment of ATR is not dependent on classification but should be directed by symptoms and signs. Treatment of severe reactions should not be delayed until the results of investigations are available.

Anaphylaxis should be treated with intramuscular adrenaline (epinephrine) according to Resuscitation Council (UK) guidelines. Patients who are thrombocytopenic or who have deranged coagulation should also receive IM adrenaline if they have an anaphylactic reaction.

If a patient develops sustained febrile symptoms or signs of moderate severity (temperature ≥ 39°C OR a rise of ≥ 2°C from baseline AND/OR systemic symptoms, such as chills, rigors, myalgia, nausea or vomiting), bacterial contamination or a haemolytic reaction should be considered.

Patients with mild isolated febrile reactions may be treated with oral paracetamol (500–1000 mg in adults). Patients with mild allergic reactions may be managed by slowing the transfusion and treatment with an antihistamine.

In all moderate and severe transfusion reactions, standard investigations, including full blood count, renal and liver function tests and assessment of the urine for haemoglobin should be performed. (See Fig 8, p50)

If febrile symptoms of moderate severity are sustained, implicated units should be returned to the laboratory for further investigation, the blood service contacted immediately so that associated components from the implicated donation can be withdrawn and the patient sampled for repeat compatibility and culture.

Patients who have experienced moderate or severe allergic reactions should have IgA levels measured. Low levels found on screening, in the absence of generalized hypogammaglobulinaemia, should be confirmed by a more sensitive method and IgA antibodies should be checked.

In the absence of platelet or granulocyte transfusion refractoriness, or acute post-transfusion thrombocytopenia or leucopenia, investigation of the patient with ATR for leucocyte, platelet or neutrophil-specific antibodies is not indicated.

For patients with recurrent febrile reactions, the current guidelines recommend a trial of premedication with oral paracetamol given one hour before the reaction is anticipated (or non-steroidal anti-inflammatory drugs in patients with predominant chills or rigors - but an assessment of the risks of medication against the severity of reaction should be made in each case). Patients who continue to react should have a trial of washed blood components.

For recurrent mild allergic reactions, there is no evidence to support routine prophylaxis with antihistamines or steroids. Alternative causes, such as allergy to drugs or latex gloves, should be excluded.
M17 For patients with recurrent moderate or severe allergic reactions, other than those in which the patient is IgA-deficient, options for further transfusion include:

i. Use of directly monitored transfusion of standard components in a clinical area with resuscitation facilities. Consider antihistamine prophylaxis (although the evidence for efficacy is low, the risks are also low). This may be the only option when further transfusion is urgent and withholding blood is a greater risk.

ii. Transfusion of washed red cells or platelets.

iii. The use of pooled solvent detergent-treated FFP when there are recurrent allergic reactions to FFP in patients undergoing plasma exchange.

M18 Patients who have experienced an anaphylactic reaction associated with transfusion must be discussed with an allergist or immunologist, in keeping with Resuscitation Council (UK) guidelines.

M19 Patients with confirmed IgA deficiency and a history of reaction to blood should be transfused with components from IgA-deficient donors (first choice) or washed red cells (second choice) if time allows. Life-saving transfusion should not be denied or delayed if these are not immediately available but the facilities and skills to manage severe allergic reactions must be present.

M20 Patients with known IgA deficiency (IgA < 0.07g/l) and no history of reactions to blood must be assessed on an individual basis, taking into account the urgency of transfusion, the indication for IgA testing, the anticipated frequency of transfusion, and history of allergy/anaphylaxis in other settings. Most will receive standard components without problems, but discussion with a transfusion medicine or clinical immunology or allergy specialist is advisable if time allows.

M21 Symptoms and signs of ATR may be less easily recognized in children or neonates although they may have a higher prevalence than in adult transfusion recipients. Hence, a high degree of vigilance by treating clinicians is needed. Protocols for drug management should be written in close collaboration with paediatric specialists.

M22 All transfusion reactions except mild febrile and/or allergic reactions must be reported to appropriate regulatory and haemovigilance organizations (MHRA and SHOT) and should also be reviewed within the hospital.

M23 Investigation of Serious Adverse Reactions: (See also Appendix N, p52, for Reporting).

- Inform Consultant Hematologist who will offer advice and alert appropriate members of the Transfusion Team

- Investigation should begin without delay and requires availability of:
  - a designated member of the clinical team caring for the patient,
  - the Transfusion Practitioner and / or other appropriate member(s) of the Transfusion Team
  - access to clinical notes and patient observations etc.

- A clinical review should take place including recommendations for the future transfusion requirements.

- The type of reaction and imputability of cause to a specific transfused blood component must be agreed by the investigators and reported with the minimum of delay.
Fig. 6: Flow diagram to guide the recognition and initial management of suspected acute transfusion reactions.

(From 2012 Guideline on the investigation and management of acute transfusion reactions Prepared by the BCSH Blood Transfusion Task Force)

Key:
- ID, identification details;
- ABC, airway, breathing and circulation;
- TPR, temperature, pulse and respiratory rate;
- BP, blood pressure;
- HTT, hospital transfusion team;
- HTC, hospital transfusion committee;
- SHOT, serious hazards of transfusion;
- MHRA, medicines and healthcare products regulatory agency.
Fig 7: All Wales Transfusion Reactions Chart:

### Transfusion Reactions – For Guidance

<table>
<thead>
<tr>
<th>Symptoms /Signs</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Temperature of ≥38°C AND rise of 1-2°C from baseline temperature</td>
<td>Temperature of ≥38°C OR a rise of ≥2°C from baseline temperature</td>
<td>Sustained febrile symptoms or any new, unexplained pyrexia in addition to clinical signs</td>
</tr>
<tr>
<td>Rigors/shaking</td>
<td>None</td>
<td>Mild chills</td>
<td>Obvious shaking/rigors</td>
</tr>
<tr>
<td>Pulse</td>
<td>Minimal or no change from baseline</td>
<td>Rise in heart rate from baseline of 10 bpm or more NOT associated with bleeding</td>
<td>Rise in heart rate from baseline of 20 bpm or more NOT associated with bleeding</td>
</tr>
<tr>
<td>Respiration</td>
<td>Minimal or no change from baseline</td>
<td>Rise in respiratory rate from baseline of 10 or more</td>
<td>Rise in respiratory rate from baseline of 10 or more accompanied by dyspnoea/wheeze</td>
</tr>
<tr>
<td>Blood Pressure (Hypo/hypertension)</td>
<td>Minor or no change to systolic or diastolic pressure</td>
<td>Change in systolic or diastolic pressure of ≥30 mm/Hg NOT associated with bleeding</td>
<td>Change in systolic or diastolic pressure of ≥30 mm/Hg NOT associated with bleeding</td>
</tr>
<tr>
<td>Skin</td>
<td>No change</td>
<td>Facial flushing, rash</td>
<td>Rash, urticaria and Peri-orbital oedema</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urticaria, pruritis</td>
<td>Conchunctivitis</td>
</tr>
<tr>
<td>Pain</td>
<td>None</td>
<td>General discomfort or myalgia</td>
<td>Acute pain in chest, abdomen, back</td>
</tr>
<tr>
<td>Urine</td>
<td>Clear</td>
<td>Normal output</td>
<td>Haematuria / haemoglobinuria / Oliguria, Anuria</td>
</tr>
<tr>
<td>Bleeding</td>
<td>No new bleeding</td>
<td></td>
<td>Uncontrolled oozing</td>
</tr>
<tr>
<td>Nausea</td>
<td>None</td>
<td></td>
<td>Nausea or vomiting</td>
</tr>
</tbody>
</table>

**All Green**

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 and disconnect, request immediate clinical review, re-check identity of the unit with the patient, give IV fluids, inform the transfusion laboratory, contact the Consultant Haematologist.

NOTE: In all cases where a transfusion reaction is suspected and the transfusion is stopped and disconnected, the implicated unit, complete with giving set, must be returned to the laboratory for further investigation.

Follow your local transfusion policy and contact the transfusion laboratory for further instructions.
### Fig. 8: Investigation of Moderate or Severe Acute Transfusion Reactions

Refer to All Wales Transfusion Reaction Chart for further guidance on symptoms and clinical management.

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>INVESTIGATIONS</th>
</tr>
</thead>
</table>
| Fever  
(≥ 2°C rise or ≥ 39°C), qand / or chills,  |
rigors, myalgia, nausea, or vomiting and / or   |
loin pain.                                    | Standard investigations  
Take samples for repeat compatibility testing: DAT, LDH and Haptoglobin.  
Take blood cultures from the patient.  
Coagulation Screen.  
Do not discard implicated unit.  
**If febrile reaction sustained**, return unit to laboratory, repeat serological investigations (compatibility testing, antibody screen and DAT), haptoglobin and culture unit.  
**If loin pain**, perform serological investigations as above. |
| Mucosal Swelling  
(Angio-oedema)                                      | Standard investigations  
Measure IgA level  
If IgA < 0.07 g/l and no generalised hypogammaglobulinaemia perform confirmatory test with sensitive method and check for IgA antibodies. |
| Dyspnoea,  
Wheeze or features of anaphylaxis                   | Standard investigations  
Check Oxygen saturation or blood gases  
Chest X-ray (mandatory if symptoms severe)  
If severe or moderate allergy is suspected measure IgA level  
If severe allergy / anaphylaxis suspected, consider measurement of serial Mast Cell Tryptase (MCT)  
Requires plain tube at immediate, 3 hr. and 24 hrs. |
| Hypotension  
(isolated fall in systolic of ≥ 30 mm Hg resulting in a level of ≤ 80 mm Hg) | **Investigate as for fever:**  
If allergy suspected measure IgA level  
If severe allergy / anaphylaxis suspected, consider measurement of serial Mast Cell Tryptase (MCT) as above |

**NOTES**

<table>
<thead>
<tr>
<th>Standard Investigations =</th>
<th>FBC, Renal &amp; Liver Profiles, Assessment of Urine for Haemoglobin</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAT =</td>
<td>Direct Antiglobulin Test (aka DCT)</td>
</tr>
<tr>
<td>LDH =</td>
<td>Lactate dehydrogenase</td>
</tr>
<tr>
<td>Ig =</td>
<td>Immunoglobulin</td>
</tr>
</tbody>
</table>

**REPORTING OF ADVERSE REACTIONS**

- **To MHRA**: Mandatory under BSQR where reaction results in severe morbidity – extended stay in hospital. Refer to Transfusion Practitioner
- **To SHOT**: All serious adverse reactions irrespective of outcome. Refer to Transfusion Practitioner
- **Welsh Blood Service**: Any suspected component contamination and suspected cases of TRALI (see M.24 below)
- **ABHB (Datix)**: As above by local risk team.

M.24 Transfusion Related Acute Lung Injury (TRALI) (Anaesthesia UK)

TRALI has been reported to occur after the transfusion of all types of blood components, but is particularly likely to occur with those with a large volume of plasma such as fresh frozen plasma (FFP). However, it has been reported after transfusion of plasma-reduced red cells containing approximately 70 mls plasma, cryoprecipitate or as little as 50 mls of whole blood.

A precise understanding of the mechanism of TRALI is at present unknown.

There is no diagnostic or pathognomonic sign to confirm TRALI. TRALI is clinically indistinguishable from acute respiratory distress syndrome (ARDS), and the occurrence of ARDS with a possible association with transfusion provides grounds to consider TRALI as the cause.

TRALI can be seen in a few minutes to 6 hours after transfusion (see Table 9 below).

Unlike ARDS, TRALI is self-limiting, and there is usually clinical improvement within 48-96 hours provided prompt respiratory support is provided.

For mild TRALI cases, supplemental oxygen and supportive care may be sufficient. For the most severe cases, IV fluids, mechanical or non-invasive ventilation and invasive cardiovascular monitoring may be required. A low tidal volume strategy with low plateau pressures should be employed when ventilating TRALI patients, just like other causes of ALI/ARDS. Mortality rate is 5%.

No specific laboratory tests are available for TRALI and initial diagnosis depends on a high degree of clinical suspicion.

The subsequent finding of leucocyte antibodies in a donor unit, matching a recipient leucocyte antigen, may be taken as strongly supportive evidence in a suspected case.

All suspected cases of TRALI must be reported to the MHRA via SABRE and to SHOT. The Welsh Blood Service must also be informed. See Appendix M

![Fig. 9: Flow chart for the diagnosis of possible TRALI Adapted from Gopal 2004](image)
Appendix N: Reporting of Serious Adverse Events & Reactions (SHS 17: a,d,e)

REGULATORY REQUIREMENT
Investigation and Reporting of Serious Adverse Blood Reactions and Events (SABRE) is mandatory under BSQR. (BSQR (2005) as amended) and required for compliance with SHS Wales: Standard 17 (a & e)

Root cause, timely Corrective and Preventative Actions (CAPA) and review of their efficacy will be carried out by the ABUHB Haemovigilance Team under the governance of the Hospital Transfusion Committee.

N1 Serious Adverse Reactions should be discussed initially with a Consultant Haematologist

N2 Serious Adverse Events should initially be discussed with a Transfusion Practitioner

N3 The ABUHB Datix system must be used for any event reported to SABRE or SHOT. There may be some events which, though not reportable externally, do need to be reported via Datix.

N4 Occasional errors which do not impact on patient safety may be reported via the internal Quality System but if these occur in significant numbers they should be reviewed and if necessary escalated to a higher status for reporting externally.

N5 All reportable Errors, Events and Reactions must be recorded and regularly reviewed to identify any trends or ‘hotspots’.

N6 The timescales for reporting, confirming and setting of Corrective and Preventative Actions (CAPA) must comply with regulatory requirements.

N7 The Haemovigilance Team will escalate the reporting of serious events or reactions to higher levels of clinical governance within ABUHB as necessary in order to achieve the setting of appropriate preventative actions especially if these require a financial or organisational commitment.

Formal Reports may be made to:

MHRA via SABRE Haemovigilance Scheme for Serious Adverse Events relating to Blood Component Storage, Handling and Distribution and Serious Adverse Reactions which result in increased morbidity or death.

Serious Hazards of Transfusion (SHOT) for all transfusion related events and reactions involving Blood Components including near misses.

WBS must be informed if donor units are suspected to be contaminated or if TRALI is suspected.

The Transfusion Practitioner will assist in the investigation and reporting of events and reactions in the clinical areas.

N8 The Hospital Transfusion Committee supported by the Hospital Transfusion Team will review serious reports and minute any decisions and actions necessary. HTC minutes are made available to the Patient Safety & Quality Committee.
Appendix O: INDICATION CODES FOR TRANSFUSION - AN AUDIT TOOL. (from NBTC 2013) www.transfusionguidelines.org.uk

The indications for transfusion provided below are taken from National Blood Transfusion Committee Indication Codes for Transfusion. Although it is accepted that clinical judgment plays an essential part in the decision to transfuse or not, the purpose of drawing available transfusion guidelines together into one short document is to help clinicians decide when blood transfusion is appropriate and to facilitate documentation of the indication for transfusion.

Each indication has been assigned a number, which may be used by clinicians 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.

These are current guidelines and may change depending on new evidence.

**Red cell concentrates:** *(Dose: For a single transfusion episode in adult patients with a potentially reversible cause of anaemia e.g. after surgery, consider transfusing one unit only with a further Hb estimation before further units are given. Neonates and small children require doses calculated in ml of blood and require separate consideration).*

**R1. Acute blood loss:**

In patients with haemorrhage and haemodynamic instability, estimation of blood loss may be difficult and Hb is a poor indicator of the need for transfusion. Empirical decisions about the immediate use of red cell transfusion are required by clinicians experienced in resuscitation, for example:

Transfuse if blood loss >30% loss of blood volume (>1500ml in an adult)

When normovolaemic use Hb thresholds below:

**Surgery/medical/critical care**

**R2.** Use Hb <70 g/l as guide for red cell transfusion

**R3. With cardiovascular disease**

Consider transfusion at a Hb of <80g/l or for symptoms e.g. chest pain, hypotension, tachycardia or unresponsive to fluid resuscitation or cardiac failure.

**R4. With severe sepsis, traumatic brain injury and/or acute cerebral ischaemia**

Use a Hb <90 g/l to guide red cell transfusion.

**R5. Radiotherapy**

There is limited evidence for maintaining Hb >100 g/l

**R6. Chronic anaemia**

Maintain the Hb to prevent symptoms of anaemia. Hb > 80g/l is appropriate for many patients. Discussion with a haematologist is advised.

**R7. Exchange transfusion.**
**Fresh frozen plasma:**  *(Dose - 15 ml/kg body weight equivalent to 4 units for an adult)*.

**F1. Coagulation Factor Deficiency:** where a specific or combined factor concentrate is unavailable e.g. factor V.

**F2.** Immediate reversal of warfarin effect, in the presence of life-threatening bleeding. **Prothrombin complex concentrate is the treatment of choice.** FFP has a partial effect and is not the optimal treatment.

**F3. Acute disseminated intravascular coagulation (DIC)** in the presence of bleeding and abnormal coagulation results.

**F4. Thrombotic thrombocytopenic purpura (TTP),** usually with plasma exchange.

**F5. Major haemorrhage.** If emergency uncontrolled bleeding, early infusion of FFP is recommended to treat coagulopathy. Subsequent use to maintain a PT and APTT ratio of <1.5 and a fibrinogen level of >1.5 g/l.

**F6.** Liver disease (non-bleeding): there is no evidence of benefit for FFP regardless of the PT ratio.

**Platelet concentrates:** *(Dose - 1 adult therapeutic dose for adults and older children)*.

**Bone marrow failure:**

**P1.** Prophylactic use if reversible bone marrow failure when the platelet count <10 x 10⁹/l. Not indicated in patients with chronic stable thrombocytopenia without a history of bleeding.

**P2.** Prophylactic use if BMF with additional risk factors for bleeding eg sepsis if platelet count <20 x 10⁹/l

**P3.** Invasive procedures. Keep count >50 x 10⁹/l, >80 x 10⁹/l if epidural and >100 x 10⁹/l if CNS or eye surgery. Transfusion prior to bone marrow biopsy is not usually required.

**Critical care /surgery:**

**P4.** Massive Transfusion: Aim to maintain platelet count >75 x 10⁹/l and >100 x 10⁹/l if multiple, eye or CNS trauma.

**P5.** Acquired platelet dysfunction if non-surgically correctable bleeding.

**P6.** Acute disseminated intravascular coagulation (DIC) in the presence of bleeding and severe thrombocytopenia.

**P7.** Inherited platelet dysfunction disorders e.g. Glanzmanns thrombasthenia with bleeding or as prophylaxis before surgery.

**Immune thrombocytopenia:**

**P8.** Primary immune thrombocytopenia. As emergency treatment in advance of surgery or in the presence of major haemorrhage. A platelet count of >80 x 10⁹/l is recommended for major surgery and a count of >70 x 10⁹/l for obstetric regional axial anaesthesia.

**P9.** Post-transfusion purpura, in the presence of major haemorrhage.

**P10.** Neonatal alloimmune thrombocytopenia, to treat bleeding or as prophylaxis to maintain the platelet count >30 x 10⁹/l.

**References**

National Blood Transfusion Committee Indication Codes – An Audit Tool (April 2013)
Appendix P: Educational Resources (SHS 17: d)

There is a large amount of educational material available from the Transfusion Practitioners and on Transfusion Websites.

The Gwent Clinical School page of the Intranet has a Blood Transfusion Service Information section and the Clinical Haematology page contains Transfusion related information as well.

e-learning modules are available via www.learnbloodtransfusion.org.uk

The Transfusion Practitioners currently teach on the IV Access course, the Monitor course (for managing deteriorating patients on the ward), Midwifery professional study days and regular Safe Transfusion sessions via Customer Services.

The All Wales Competency Package for Pre-Transfusion Sampling, Collection and Administration is used to assess staff with these roles and a number of ward based assessors have been trained to assist in this

Other opportunities to teach are fulfilled whenever possible.

The following pages contain examples of posters and handouts currently used in teaching.
NB: In Wales the patient’s core identifiers include the 1st line of their address.
P2: Time Limits for Component Transfusion.

Time Limits for Transfusion …

Recommended Transfusion rates $^{1}$:
(NB:  For guidance only. The risks, benefits and alternatives of transfusion must always be assessed prior to the transfusion of any blood component).

- Red cells: 2 – 3 hours.
- Platelets and FFP may be transfused over 30 minutes.

Time to Transfuse:
Blood components must be transfused within 4 hours of removal from controlled storage i.e. Blood Bank / opening of Transport Box (or by the pack expiry time) to avoid risk of bacterial growth.

Blood Components received back in Blood Bank after 30 minutes of removal from controlled storage cannot be re-issued and must be wasted.

Do Not …
Request blood components until the patient and staff are prepared and ready to transfuse (eg. pre-Tx Obs, patent venous access, available staff).

Do Not …
Transfer unused units with patient to a different clinical area (unused units should be returned to Blood Bank immediately)

Reference:
1. Handbook of Transfusion Medicine, 4th Ed.
P3: Safe Component Handling.

Safe Blood Component Handling

1. Do not request blood components unless you are ready to transfuse – NB: you should only request one unit at a time unless otherwise directed.
   CHECK: that the Transfusion Record has been completed, availability of staff and patient, patent venous access, pre-transfusion observations and appropriate equipment.

2. Ensure that blood component(s) are kept under control at all times
   Sign to check and receive them (Transport Boxes now have external documentation)

3. Components must be transfused within 4 hours of removal from controlled storage (Blood Bank or Transport Box)

4. If there is a delay in transfusion consider immediate return to Blood Bank
   Components which have been returned to Blood Bank more than 30 minutes after removal from controlled storage, cannot be re-issued to patients.
   ***** NEVER STORE IN A WARD REFRIGERATOR *****

5. If returning components contact the Blood Porter directly – do not just leave them for routine collection

6. Do not transfer components with patients to a different area
   Components must be returned to Blood Bank for re-issue / re-packing

Handling & Storage errors constitute a serious risk!

Components left unattended in the clinical area have been transfused to the wrong patient (Ref: SHOT 2011 p29) or given to the right patient when no longer safe.

Unsafe / Expired components must be returned to Blood Bank immediately

Remember to complete and return the Traceability documentation a.s.a.p.
and place the red sticker in the Transfusion Record.

SAFE COMPONENT HANDLING & TRACEABILITY ARE LEGAL REQUIREMENTS (BSQR 2005)

Further Information is contained in the ABUHB Blood Component Transfusion Policy
(See Clinical Policies on Intranet)

<table>
<thead>
<tr>
<th>RGH Contact Numbers</th>
<th>NHH Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Bank: 44477</td>
<td>Blood Bank: 2233</td>
</tr>
<tr>
<td>Porters Duty Desk: 4089</td>
<td>Porters Duty Desk: 2055</td>
</tr>
</tbody>
</table>

Updated by Transfusion Practitioners (January 2014): Tel: 01633 234476 (Internal 44476)
### P4: SHOT Anti-D Checklist:

NB: Refer to ABHB Anti-D Policy on Intranet for full information.

#### Anti-D Administration Checklist

**Always confirm**
- the woman’s identity
- that the woman is RhD Negative using the latest laboratory report
- that the woman does not have immune anti-D using the latest laboratory report
- that informed consent for administration of anti-D Ig is recorded in notes

#### Potentially Sensitising Events (PSEs) during pregnancy

<table>
<thead>
<tr>
<th>Gestation LESS than 12 weeks</th>
<th>Administration: 260iu anti-D Ig within 72 hours of event. Confirm product / dose / expiry and patient ID pre administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal bleeding associated with severe pain</td>
<td></td>
</tr>
<tr>
<td>ERPC / Instrumentation of uterus</td>
<td></td>
</tr>
<tr>
<td>Medical or surgical termination of pregnancy</td>
<td></td>
</tr>
<tr>
<td>Ectopic / Molar Pregnancy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gestation 12 to 20 weeks</th>
<th>Administration: 260iu anti-D Ig within 72 hours of event. Confirm product / dose / expiry and patient ID pre administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>For any Potentially Sensitising Event (PSE)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gestation 20 weeks to term</th>
<th>Administration: 600iu anti-D Ig within 72 hours of event. Confirm product / dose / expiry and patient ID pre administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>For any Potentially Sensitising Event (PSE) (Irrespective of whether RAADP has been given)</td>
<td>Request a Kleihauer Test (FMH Test) and immediately administer at least 600iu anti-D Ig within 72 hours of event. Confirm product / dose / expiry and patient ID pre administration</td>
</tr>
<tr>
<td>Does the Kleihauer / FMH test indicate that further anti-D Ig is required?</td>
<td>Administer more anti-D Ig following discussion with laboratory</td>
</tr>
</tbody>
</table>

For continuous vaginal bleeding at least 500iu anti-D Ig should be administered at a minimum of 6-weekly intervals, irrespective of the presence of detectable anti-D, and a Kleihauer / FMH Test requested every two weeks in case more anti-D is needed.

#### Routine Antenatal Anti-D Prophylaxis (RAADP)

**For Routine Antenatal Anti-D Prophylaxis**
- (Irrespective of whether anti-D Ig already given for PSE)

- Take a blood sample to confirm group & check antibody screen – do not wait for results before administering anti-D Ig

- Administer 1500iu anti-D Ig at 28 – 30 weeks

  OR

- Administer at least 600iu anti-D Ig at 28 weeks and then administer at least 500iu anti-D at 34 weeks

- Confirm product / dose / expiry and patient ID pre administration

#### At Delivery (or on diagnosis of Intra Uterine Death >20 weeks)

- Is the baby’s group confirmed as RhD positive?
  - OR
  - Are cord samples not available?

- Does the Kleihauer / FMH test indicate that further anti-D Ig is required?

- Administer more anti-D following discussion with laboratory

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**SHOT anti-D Ig Administration Flowchart v7 October 2012**

**Status: Issue 3**
Approved by: Clinical Standards & Policy Group

**Issue date: 02 December 2013**
Review by date: 02 December 2014
Wrong Blood In Tube – The Tip of the Iceberg

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Introduction
The Serious Hazards of Transfusion (SHOT) scheme has collected ‘near miss’ events since 1999 with the aim of assisting hospitals to reduce human error in the transfusion process. These are defined as any error which, if undetected, could result in the determination of a wrong blood group or transfusion of an incorrect component, but was recognised before the transfusion took place. Near miss events currently constitute about one third of all SHOT reports (1080/3038 in 2011).

Methods
An analysis was performed of all SHOT ‘near miss’ events reported 2010-2011 with detailed analysis of ‘wrong blood in tube (WBIT)’ near misses sample errors in 2010 and 2011.

Results
‘Near miss’ events constitute one third of all SHOT reports (Fig. 1). Sample errors contribute 50% of near miss events each year and more than 90% of sample errors are incidents of WBIT (Fig. 1). WBIT events can result in ABO and/or RhD incompatibility transfusion of which there were 3 in 2010 and 5 in 2011 (Fig. 3), showing that clinical episodes are the tip of a large iceberg (Fig. 2,3) with more than 99% WBIT fortuitously detected prior to transfusion. Doctors are responsible for a disproportionate number of WBIT sample errors and phlebotomists for considerably fewer (Fig. 4). Most of these were caused by failure to identify the patient correctly at the bedside.

Conclusions
SHOT analysis of ‘near miss’ events highlights sample errors that are detected prior to the release of results or blood components, because historical records have highlighted a grouping discrepancy. The detection rate may indicate the efficiency of the laboratory Quality Management System and demonstrates the importance of linking patient data to historical records. The number of WBIT errors is likely to be under-reported as many ABO and/or RhD non-identical transfusions may be uneventful or undetectable if the patient requires no further treatment and has no historical group, and a proportion will fortuitously be ABO and/or RhD identical. The rate of sampling errors has remained static since 1999 despite recommendations in the SHOT annual reports for better training.

Learning Point - These errors are avoidable if the basic steps to safe transfusion are properly completed, starting and ending with the correct identification of the patient.