A Guide To Safe Blood Transfusion Practice

Introduction To Blood Transfusion Safety

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(on behalf of the UHL Blood Transfusion Team)
This module is for the following staff:

- Biomedical Scientists
- Health Care Assistants/Clinical Support Workers
- Medical Staff
- Midwives
- ODP
- Perfusionists
- Phlebotomists
- Registered Children’s Nurses
- Registered Nurses
- Other support staff involved in blood collection
Contents

• Why is transfusion safety important?

• A summary of current legislation and guidelines

• What are the main risks in the transfusion process?

• How to minimise human errors in the transfusion process

• Information about the UK haemovigilance scheme - SHOT (Serious Hazards of Transfusion).
Aims and Objectives

**Aims:**
- Increase staff awareness and knowledge and to reduce blood transfusion errors

**Objectives:**
- To make staff aware of:
  - The legal requirements applicable to blood transfusion
  - The general safety issues relating to blood
Current Legislation/other directives applicable to Blood Transfusion

Blood Safety and Quality Regulations (2005)

• There are several legal requirements applicable to the transfusion of blood components. The following three are directly relevant to clinical staff/areas:

• **100% TRACEABILITY FOR ALL BLOOD COMPONENTS**
  - It is the legal responsibility of the person administering the blood/blood component to complete and sign the orange card and immediately return it to blood bank.
  - UHL has a legal obligation to maintain blood traceability records for a minimum of 30 years.

• UHL currently operates a manual (orange card) system for this. However, there are plans afoot to implement a comprehensive, vein-to-vein, electronic blood tracking and Traceability Management system in the near future.

• **All Serious Adverse Blood Related Events (SABRE) MUST be reported to the MHRA (Medicines and Healthcare products Regulatory Agency) within 7 days of their occurrence.**
  - It is the responsibility of clinical teams to immediately report such events to blood bank who will then report to the MHRA.

• **All staff involved in any aspect of blood transfusion must receive training in safe handling of blood and blood components.** (This training is covered in the next eLearning module)
Current Legislation/other Directives Applicable to Blood Transfusion


• The UHL Blood Transfusion Training Policy, in line with the NPSA recommendations, requires all staff involved in the transfusion process to complete the following training:
  1. Blood Transfusion eLearning, once every 3 years.
  2. An initial one off competency assessment for staff involved with sampling, collection and or administration of blood components.


• This department of health directive sets out comprehensive standards to ensure safe and appropriate use of blood component.
Why is Blood Transfusion Safety Important?

Blood transfusion is an essential part of modern healthcare
And if used correctly it can save life

However...
• There are significant risks associated with blood transfusion, and very rarely complications of blood transfusion can lead to a patient’s death.

• Most **serious complications of blood transfusion result from human error** i.e. lack of knowledge of correct procedures and/or failure to follow correct procedures.

• **Almost all human errors are avoidable** – you must know and follow the correct procedures.
Why is Blood Transfusion Safety Important?

Some of these risks include:

- Rare transmission of viral infection (e.g. HIV, Hepatitis B, Hepatitis C etc)
- Transmission of bacterial and other infections
- “Incorrect blood component transfused” (wrong blood given) incidents
- Transfusion Related Acute Lung Injury (TRALI)
- Acute or delayed transfusion reactions

Of these, “incorrect blood component transfused” currently carries the highest transfusion risk

- The greatest risk associated with transfusion is due to human error
  - For example, collecting the wrong unit of blood from the blood bank fridge. These errors can lead to complications, which and be serious and LIFE THREATENING.
Serious Hazards of Transfusion (SHOT)

- SHOT is an anonymous national scheme for reporting adverse blood incidents or “near miss” incidents.

- With SHOT analyses this data and produces annual reports with recommendations for improving patient safety.

- SHOT analyses the data sent in each year and produces very useful on annual reports.

- SHOT annual reports are available at their website: www.shotuk.org
The Bedside Check!

• Human error is a major contributing factor in transfusion complications.

• The annual SHOT reports continue to highlight that most errors occur in clinical areas i.e. during collection and/or administration of blood components.

• A common cause of error within the transfusion process continues to be failure to adhere to the correct procedures at every stage of the transfusion process.
**Massive Haemorrhage (MH) Protocol**

In a situation where a patient has unanticipated bleeding and there is no cross-matched blood currently available, the O negative emergency blood may be used whilst an urgent cross-match is sent.

A *Massive Haemorrhage* is classified as:

- **50% of TBV loss in 3 hrs or TBV loss < 24 hrs**
- **rate of loss of blood at 150 mls/minute**

The clinician should activate this policy if \( \geq 4 \) **UNITS OF RED CELLS HAVE BEEN TRANSFUSED WITHIN AN HOUR AND SIMILAR FURTHER NEED IS ANTICIPATED.**

The MH Protocol is activating by **dialling 2222** and stating the words “*Massive Haemorrhage*” in the message relayed to the switchboard operator, along with the standard information required in a 2222 emergency.

Once activated, Blood Transfusion staff will begin preparing blood components at regular intervals of 15 minutes until the MH is ‘stood down’ by the clinical team caring for the patient.
### Massive haemorrhage - UHL policy

**NB:** includes massive obstetric haemorrhage

**Blood product variables and drug doses are stated for ADULTS**

In **CHILDREN**, involve senior anaesthetist from the start to advise on the appropriate drugs and doses

#### Massive haemorrhage - UHL policy

<table>
<thead>
<tr>
<th>Major bleeding</th>
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<tbody>
<tr>
<td><strong>Policy not applicable; must test if indicated</strong></td>
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**E.g. trauma team leader or equivalent - including flying squad doctor**

**Inform your consultant NOW**

**Nominate a Blood Bank 'commander' for the duration of the incident (inform laboratory if this changes)**

**Coordinator calls 2222 and says 'Massive Blood Bank'**

**When Blood Bank staff call back, coordinator will say 'Massive haemorrhage DECLARED' and give details of incident**

**Coordinator's own name**

**Incident location (e.g. ED resuscitation room)**

**Extension number (ideally including one alternative)**

**Patient's details if already known**

**Ensure required blood samples have been sent (see box 4)**

**Prepare hypothermia - use fluid warming devices and forced air warming blanket (e.g. Bar Heater)**

**Blood Bank immediately prepares MHP (massive haemorrhage pack - see reverse/next page)**

**Send 'runner' to Blood Bank NOW to wait for MHP**

**Bleeding controlled?**

**Give MHP**

**Follow through bleeding control measures (see box 5)**

**Rescue laboratory test bundle (see box 4)**

**Beware hyperkalaemia if >4 units of red cells transfused**

**Make post-directed adjustments (see box 6)**

**Blood Bank to call coordinator 15min after MHP released**

**Request next MHP**

#### Antifibrinolytic measures

Consider tranexamic acid IV in adults, given as follows:

- **10mg (100mg) as a slow bolus over 60 seconds followed by**
- **15mg (150mg) for 60s**

**In obstetric patients, give 3 units IV over 60s (i.e. equates to dobutamine at 20μg/kg) to those <150cm tall or 6 units IV over 60s for those >150cm tall**

**If 0.9% saline is being used, give any antifibrinolytic after obstetric pharmacokinetic first line techniques (intrauterine, iv, with calcium of infusion from injury)**

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#### Massive haemorrhage pack (MHP) release sequence

For action by Blood Bank staff (Clinicians: for information only)

**MHP 1**

- **Red cells**
  - >50kg: 4 units
  - 31-50kg: 3 units
  - 10-30kg: 2 units
  - <10kg: 1 unit

**Equivalent of MHP 1**

- >50kg: 3 units
- 31-50kg: 2 units
- 10-30kg: 1 unit
- <10kg: 1 unit

**When to declare**

Typical scenarios include but are not limited to:

- **Clinically obvious severe traumatic bleeding or collapse**
- **Haemorrhagic shock (e.g. acute myeloid leukaemia)**
- **>1000ng of creatinine per litre in children:**
- **>100000 red cells transfused within 24hr**
- **Newborns**

**Laboratory tests**

- **Bleeding, thrombocytopenia**
- **Hemoglobinography**

**Whole blood**

- **Platelets**

**PLT and UFM only initially**

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#### Massive haemorrhage pack (MHP) release sequence

For action by Blood Bank staff (Clinicians: for information only)

**MHP 2**

- **Red cells**
  - >50kg: 4 units
  - 31-50kg: 3 units
  - 10-30kg: 2 units
  - <10kg: 1 unit

**FPF**

- 3 units

**Cryoprecipitate**

- 2 pools

**Notes to clinicians**

- If cross-matched blood not yet available, red cells will be provided as:
  - **O negative (women and children) or 0 positive (men)**
  - Group specific

- FFP and cryoprecipitate both require defrosting – this takes about 20min

- In children, transfusion of 5mL/kg red cells will typically raise HB by 10g/L.
Positive Patient Identification

• It is essential that staff check the patient’s identity at every stage in the transfusion process in order to ensure the:

  **RIGHT PATIENT** receives the **RIGHT BLOOD**

• A **positive patient Identification** is performed by:

  **Checking the patient’s first name, surname, DOB and hospital number.**

  Ask the patient to verify these details where ever possible but **ALWAYS** check the patient ID band.

  (NB for out patients check the patient’s address along with their full name and DOB)