Selection and Prescription of Blood components

Staff responsible for selecting blood components

- Medical staff
- Laboratory staff

The selection of blood components

All blood components provided by NHS Blood and Transplant (NHSBT) are leucodepleted at source. The majority of red cells have additional typing performed, thus the Rh phenotype and Kell status of most red cell donations are known.

Certain patient groups benefit from 'special' blood components.

These special products can be divided into certain categories:

- Irradiated components to prevent transfusion associated graft-vs-host disease (TAGvH)
- Blood components from Cytomegalovirus (CMV) seronegative donors
- Selected donations to prevent the potential allo-immunisation of certain patient groups to red cell antigens. This action prevents problems during subsequent transfusions or pregnancies
- Virally inactivated plasma components
- Specific antigen negative units selected for patients with red cell antibodies.
- Washed Red Blood cells
- HLA/HPA matched
- Apheresis

If there is ever any doubt as to the particular needs of a patient, discuss with a Consultant Haematologist.

It is the responsibility of the requester to ensure, in the case of irradiated or CMV requirements, that the correct blood component is requested. Other requirements are the responsibility of the Haematology and Laboratory team.

When notified, the Blood Transfusion Laboratory will update their IT system to reflect requirements.

The Blood Transfusion Laboratory will issue appropriate components, dependent on availability, for the other requirements. The effectiveness of this will depend upon accurate and relevant clinical information being provided.

Irradiated components

Cellular blood components are irradiated to prevent Transfusion-associated Graft-vs-host disease (TA-GVHD).

For patients requiring Irradiated components, it is the responsibility of the Medical staff to inform the transfusion laboratory staff and the Transfusion Nurse Practitioner for the requirement of Irradiated components.

The Transfusion Nurse Practitioner sends out NHSBT Irradiated products literature to the patient.

Effect of irradiation on blood components

Irradiation does not affect the expiry date of platelets but does affect the expiry date of red cells.

Top-up transfusion - requires components to be transfused within 14 days from the date of irradiation

IUT and Exchange transfusion - requires components to be transfused in less than 24 hours from the time of irradiation.

CMV negative cellular components

Some of the indications for CMV negative products are listed below:

- CMV negative red cell and platelet components should be provided for intra-uterine transfusions and for neonates.
- Granulocyte components must be CMV negative for CMV negative patients
- CMV negative blood components should be provided for pregnant women (regardless of their CMV status)
- Please note: Southampton General Hospital, our regional allograft centre, still has a policy of CMV +ve products for those patients who are CMV -ve).

Neonatal and paediatric patients less than 12 months old

For this group of patients, CMV Negative components are essential to prevent transmission of infected donor lymphocytes.

Apheresis platelets and virally inactivated plasma components should be used for this group of patients.

Hepatitis E Virus (HEV) Negative components

NHS Blood and Transplant screen all blood component donations for HEV.

Patients born on or after 1st January 1996

It is recommended that these patients received virally inactivated plasma components

Women of child-bearing potential (<51 years)

Although the potential to produce allo-antibodies to all red cell antigens cannot be avoided, it is possible to avoid transfusing this group with components that may immunise against the commonly encountered, significant, red cell antibodies during pregnancy.

These patients:

- should receive K negative red cells unles they are unavailable in an emergency.
- If Rh D negative should always receive Rh D negative red cells, unless unavailable and in emergency.

Should a Rh D negative patient be transfused Rh D positive platelets then advice will have to be sought from a consultant haematologist over the need for anti-D immunoglobulin to prevent allo-immunisation of the patient.

Transfusion dependent patients including Sickle cell Anaemia

For patients who receive regular transfusions an individualised care plan is recommended in discussion with a Consultant Haematologist and a request for an extended red cell phenotype / genotype to be considered.

Patients requiring regular blood transfusions e.g. haematology patients and those with thalassaemia and sickle cell anaemia should have red cell components matched for their red cell phenotype as closely as possible. In practice, red cells matched for the following red cell antigens should be used.

- D, C, E. c and e
- Kell

HbS negative blood should be selected for patients with sickle cell anaemia.

Sickle cell anaemia patients, it is recommended that red cells less than 10 days old is used for top -up transfusion and less than 7 days old for exchange transfusion when possible.

Transfusing Rh D positive blood components to Rh D negative patients.

Rh D positive red cells must not be transfused to Rh D negative females of child-bearing potential.

It is acceptable to give Rh D positive red cells to Rh D negative >18 year old males or females > 51 years old, in an emergency (e.g. massive transfusion), until the patient's blood group is known or if a shortage of Rh D negative red

cell (e.g. amber alert status).

Should a Rh D negative patient be transfused Rh D positive platelets (female < 51 years old) then advice will have to be sought from a consultant haematologist over the need for anti-D immunoglobulin to prevent allo-immunisation of the patient.

Note:

As regards antigen negative components it is important to note these points are recommendations and if the severity of the patient's clinical condition is such that, to provide red cells matched to these antigens would severely compromise the patient, then non-matched units could be used.

Owner: Hospital Transfusion Team

Reviewed: June 2025

Review Date: June 2028