

Incorrect blood component transfused – specific requirements not met errors

Introduction: Types of specific requirement (for components and administration)

Please see [British Society for Haematology guidance](#) for complete information on specific requirements. The information below is intended as a summary only, local policies may also include additional patient groups



Irradiated components: Required for a variety of conditions including; all granulocyte transfusions, intrauterine transfusions (IUT) and subsequent neonatal transfusions, patients treated with purine analogues, Hodgkin's lymphoma, and pre- and post-haemopoietic stem cell transplants (HSCT)
Possible consequence of non-compliance: **Transfusion-associated graft-versus-host disease**



Antigen negative: K and D antigen negative red cells required for individuals of childbearing potential who are negative for the antigen. Red cells should be antigen negative for any clinically significant corresponding alloantibody present (or previously detected) in patients plasma
Possible consequence of non-compliance: **Maternal sensitisation leading to haemolytic disease of the fetus and newborn, or haemolytic transfusion reaction (HTR)**



Phenotype matched: Patients with haemoglobinopathies require red cells which are matched for Rh and K antigens
Possible consequence of non-compliance: **Sensitisation, HTR, lower haemoglobin increments and increased frequency of transfusion**



Cytomegalovirus (CMV) screened negative: Required for all granulocyte transfusions in HSCT patients where the recipient is CMV negative, all IUT and subsequent neonatal transfusions, and for elective transfusions in pregnancy
Possible consequence of non-compliance: **CMV infection in the recipient or fetus**



IgA deficient components: Patients with a history of transfusion reactions caused by anti-IgA require platelets in additive solution, washed red cells and IgA deficient fresh frozen plasma.
Possible consequence of non-compliance: **Allergic/anaphylactic reactions**



HLA/HPA-matched: Patients with proven anti-HLA or anti-HPA antibodies require platelets which are negative for the corresponding antigens
Possible consequence of non-compliance: **Poor platelet increments and increased risk of bleeding**



Blood warmer: Some patients may have antibodies which only act at colder temperatures, for these patients a blood warmer is used to ensure the red cells are at the right temperature as they are transfused
Possible consequence of non-compliance: **Blood clots and destruction of transfused red cells**

SHOT data 2016-2020

Fig. 1 shows the number of incorrect blood component transfused–specific requirements not met (IBCT-SRNM) errors 2016-2020. 117/1167 (10.0%) cases involved paediatric patients. No deaths occurred due to IBCT-SRNM during this period, but 12 cases of major morbidity were directly caused (Fig. 2). Most clinical errors are failure to request irradiated or CMV screened components and most laboratory errors are failure to complete testing prior to issue, inappropriate use of electronic issue or providing the incorrect phenotype.

Fig 2. Major morbidity caused by IBCT-SRNM 2016-2020 (n=12)

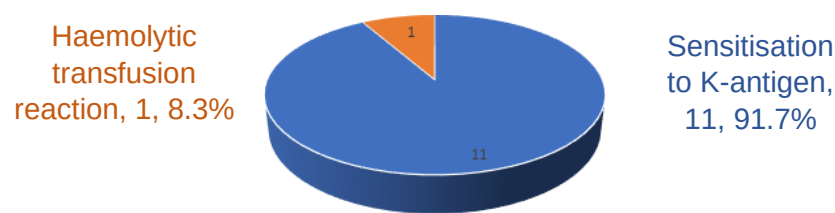
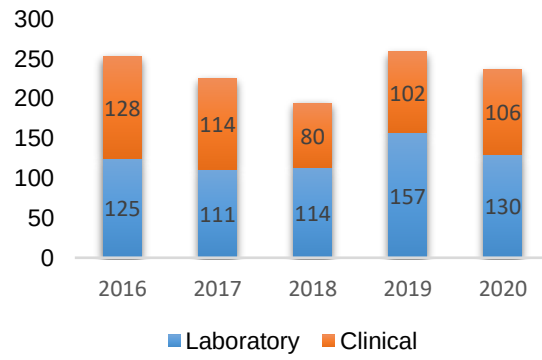
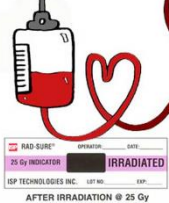


Fig. 1: IBCT-SRNM errors 2016-2020 (n=1167)





25 Gy INDICATOR
IRRADIATED
AFTER IRRADIATION @ 25 Gy



RADTAC[®] IRRADIATION INDICATOR
If control dot visible, not irradiated
If control dot blue, irradiated

ALWAYS CHECK IF YOUR PATIENT HAS ANY SPECIFIC REQUIREMENTS FOR BLOOD TRANSFUSION

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SHOT Reporting

Errors resulting in failure to provide these specific requirements are reportable to SHOT (scan QR code for full definitions). Other failures in laboratory processes which are reportable as IBCT-SRNM are:

- Incomplete testing
- Testing an expired sample
- Inappropriate use of electronic issue



Case study – Anti-K sensitisation

An antenatal booking group and screen for a patient in her 30s at 16 weeks' gestation revealed a positive antibody screen.

The sample was sent to the reference laboratory at the Blood Service for antibody identification and titration. Two antibodies were confirmed, anti-K and anti-Fy^a, both with high titration levels.

On investigation by the hospital transfusion laboratory, it was found that this patient had been transfused one of two units of red cells issued in 2014 during a postpartum haemorrhage. The unit transfused was found to be K-positive and Fy^a status was not known. It is possible K-negative units were not selected due to stock availability.

The father of the baby was heterozygous for the K antigen and the patient was transferred to the care of an obstetric consultant to monitor adverse effects on the fetus.

Key messages and recommendations

Accurate communication of specific requirements between clinical staff, and from clinical staff to the laboratory is vital to ensure the patient is provided with appropriate blood components

K-negative units should be provided to K-negative individuals of childbearing potential. Failure to do so puts future pregnancies at risk. Laboratory information management systems (LIMS) rules, which cannot be easily overridden, support safe practice

Information regarding specific requirements should be highlighted as an alert in electronic systems such as prescriptions, case notes, transfusion observation systems and laboratory information management system (LIMS). These systems should be updated regularly and be easily accessible

A check of serology and blood components issued by lone workers at the next available opportunity may identify errors before the patient is put at risk

Laboratory staff should have knowledge of the clinical requirements of transfusion to work collaboratively to deliver cohesive patient-centred care

A review of specific requirements should form part of routine pre-administration checks and should be included on transfusion prescription/authorisation

Further resources

- BSH guidelines for transfusion <https://b-s-h.org.uk/guidelines/?category=Transfusion&p=1&search=>
- Safe transfusions in haemopoietic stem cell transplant recipients <https://www.shotuk.org/resources/current-resources/>
- SHOT videos (paediatric SHOT and pre-administration checks) <https://www.shotuk.org/resources/current-resources/videos/>
- SHOT Safety Notice 02 Ensuring patient specific requirements are met and related gap analysis tool <https://www.shotuk.org/wp-content/uploads/myimages/Safety-Notice-SRNM-June-2022.pdf>