

Learning Points from the 2010 SHOT report

Learning Points for Clinical Staff

- Transfusion should only take place if there are sufficient staff available to monitor the patient and the patient can be readily observed.
- Transfusion should only be performed where there are facilities to recognise and treat anaphylaxis
- A hyperhaemolytic transfusion reaction should be suspected if the patient develops a more marked anaemia than was present pre-transfusion. Expert advice should be sought from a specialist unit or the Blood Service.
- In those patients predisposed to TACO, careful assessment must be made of their pre-transfusion fluid balance status and the tolerable rate of transfusion.
- In patients with modest but ongoing blood loss, frequent monitoring of the Hb is essential.
- Every Trust must review its Major Haemorrhage Protocol to ensure that it is compliant with the recommendations of the NPSA Rapid Response Report 'The transfusion of blood and blood components in an emergency' NPSA/2010/017.
- In a non-urgent situation, components must not be transfused that are not prescribed.
- Components should whenever reasonable be collected for one patient at a time to prevent their transposition to the incorrect patient.
- All Trusts/Boards must incorporate the recommendations of the BCSH guidelines on the Administration of Blood Components into local transfusion policies.
- All haematology units must devise specific educational programmes for all their staff members providing the rationale and indications for specialist components and this information should be accessible at the time of making the requests for blood components.
- All haematology units must possess a documented procedure for communicating the need for specialist components to the laboratory, including the responsibilities of both parties.
- With respect to purine analogues, systems can be developed with the pharmacy to alert either the prescriber or the transfusion laboratory of the need for irradiated components. Nevertheless, the primary responsibility for prescribing specialist components rests with the clinician and the responsibility for informing the transfusion laboratory rests with the clinical team.
- All members of the clinical haematology team should be empowered to challenge an inappropriate prescription.

- All transfusion request forms should be fully completed with as much information as possible, including relevant medical history, any known special requirements, antibodies, pregnancy, IUT and exchange transfusion (ET).
- It is imperative that staff are vigilant at all times both in the laboratory and clinical areas when participating in the patient ID process, especially when the patient is admitted.
- NO wristband (or alternative patient ID) – NO transfusion.
- Patients with GI bleeding not meeting the criteria for massive haemorrhage must have frequent monitoring of their Hb.
- Patients referred by their GPs to A&E or MAUs for blood transfusion must be referred to a haematologist.
- Effective communication between all staff involved in the transfusion process is vital to prevent unnecessary errors occurring.
- Anti-D Ig must still be administered in response to a PSE even if the patient has received, or is due to receive, RAADP. RAADP must still be administered at the appropriate time, even if the patient has recently received anti-D prophylaxis for a PSE.
- In the acute situation, it can be difficult to determine whether new adverse clinical features are due to an ATR, to other complications of transfusion or to the patient's illness. The over-riding priority is to manage the clinical condition, whether or not the cause is clear.
- It is worth repeating that the UK Resuscitation Council (UKRC) recommends that IM adrenaline is the first-line treatment for anaphylaxis of whatever cause
- Hyperhaemolysis is an uncommon but well-documented serious complication of transfusion in sickle cell disease in which there is destruction of both autologous and transfused red cells. If possible, further transfusion should be avoided since this may exacerbate the haemolysis and lead to a protracted course or even death. The use of IVIg and/or steroids should be considered as a means of correcting the anaemia.
- A DHTR should be considered as a diagnosis in patients with sickle cell disease presenting with crisis up to 14 days post transfusion.
- TACO is potentially avoidable in many cases. Doctors should undertake pre-transfusion clinical assessment, taking into account concomitant medical conditions that increase the risk of TACO (cardiac failure, renal impairment, hypoalbuminaemia, fluid overload) and consider diuretic cover (e.g. furosemide).
- Nurses should monitor the rate of transfusion and fluid balance as these factors influence the risk of a patient developing TACO.
- SHOT reports indicate that TACO can occur up to 24 hours after the transfusion, therefore the patient should be monitored accordingly, as advised in the BCSH guidelines on the administration of blood components
- TACO can occur after transfusion of small volumes of RBC, even ≤ 1 unit.

- Patients >70 years are particularly at risk of TACO following RBC transfusion in the absence of suspected acute haemorrhage.
- Patients <70 years are also at risk of TACO, particularly in the presence of factors that increase the risk of TACO: cardiac failure, renal impairment, hypoalbuminaemia and fluid overload.
- There are few proven indications for FFP, but if FFP is indicated, the BCSH guidelines state that the conventional dose is 10–15 mL/kg, with the dose dependent on the clinical situation and its monitoring.
- Plasma exchange (PEX) with FFP replacement (rather than FFP transfusion without PEX) is the mainstay of the treatment of TTP and has led to a reduction in mortality from >90% to approximately 20%. Patients diagnosed as having TTP should be transferred to a unit that can provide PEX as soon as is feasible, with FFP transfusion while this is being organised. SD FFP should be used.
- Although the majority of cases occurred within 2 hours of the onset of transfusion, TAD can occur up to 24 hours after transfusion. Appropriate monitoring should therefore be undertaken, as detailed in the BCSH guidelines on the administration of blood components.
- Retain suspected bacterially contaminated packs even if near empty for return to the Blood Service as these can be washed out and the residue cultured.
- Testing for antibodies to hepatitis B core in samples taken prior to transfusion can help rule out reactivation of past HBV infection in immunocompromised patients.
- All cell salvaged units should be labelled with the patient core identifiers to reduce the risk of error on reinfusion. The autologous transfusion label has been designed by the UK Cell Salvage Action Group and supplied by the manufacturers to allow these criteria to be met.
- Monitoring of patients during the transfusion is as important for the reinfusion of red cells collected by Intra-operative Cell Salvage or Post-operative Cell Salvage as it is for allogeneic red cells.

Learning points from 2009 that remain relevant

- No wristband – no transfusion.
- The compatibility form must not be used as part of the patient ID check.
- The patient must be physically present when the ID check is carried out. Any other check is not a patient ID check.
- Patient ID is an absolutely fundamental part of the delivery of healthcare in any discipline, and should be second nature to all staff.
- It is crucial that the content and principles contained in any training and competency package are fully appreciated and understood if errors are to be avoided.

Learning Points for Laboratory Staff

- Variations in D typing of patients with a weak D antigen may be unavoidable as technologies differ in their sensitivity but it is important that the D type is determined by the most robust routine method available
- 5/6 grouping errors reported in the IBCT chapter and all grouping errors in the near miss chapter (Chapter 21) were made using manual procedures. The UKTLC recommends the use of 24/7 automation for ABO/D grouping.^{5,6}
- D-grouping errors resulted in the erroneous administration of anti-D Ig and were reported according to that outcome. Reporters are reminded that if the primary error was in the determination of the D group, then the case should be reported as a grouping error (IBCT).
- Laboratories need to look critically at the way in which mother and baby records are linked and assess how robust this linkage is.
- Laboratories should critically assess the use of alerts/warning/algorithms on the LIMS and ensure they are being used as effectively as possible. The ability to easily override warnings/alerts should be discouraged.
- Training and competency-based assessment must include appropriate actions on receipt of alerts/warnings, whether these are on the LIMS or an analyser.
- Training and competency-based assessment must include, and indeed highlight, the less common transfusion scenarios and standard operating procedures (SOPs) must give clear instructions on the use of infrequently used components.
- Critically assess the use of alerts/warning/algorithms on the LIMS and ensure they are being used as effectively as possible.
- Risk assess the process in place for alerting the laboratory to the need for special requirements and ascertain if that method is as robust as possible.
- It is imperative that laboratory staff are extra vigilant when issuing multiple components for the same patient and that a final component/patient ID check is undertaken prior to issue. Hospital transfusion laboratories should consider purchasing label verification software or ensuring that a two-person check of units is undertaken prior to issue.
- Training and assessment in the laboratory must cover basic manual checking procedures.
- 12% of unnecessary transfusions could be avoided if laboratories did not transmit results they know or suspect to be inaccurate, but instead requested a second sample.
- A further 12% of unnecessary transfusions could be avoided if laboratories required confirmation of correct transmission of telephoned results.

- In accordance with Better Blood Transfusion 2007/001, protocols should be in existence which empower laboratory staff to question the appropriateness of requests for transfusion.
- Hospitals should have a robust policy in place for removing expired blood components and components past their suitability date from satellite fridges.
- Effective communication between all staff involved in the transfusion process is vital to prevent unnecessary errors occurring.
- Anti-D Ig must still be administered in response to a PSE even if the patient has received, or is due to receive, RAADP. RAADP must still be administered at the appropriate time, even if the patient has recently received anti-D prophylaxis for a PSE.
- If a typing reagent is available, antigen-negative units should be provided for patients with anti-Co^b, since serological crossmatching is more prone to error.
- Testing an eluate is an important part of investigating an HTR, and may be the only way of identifying any or all of the antibodies present.
- Systematic exclusion of all antibodies of likely clinical significance is an essential part of the antibody identification process and may necessitate the use of further red cells or techniques.
- If sampling packs for bacterial testing, use ports rather than breaching the pack to minimise environmental contamination of the pack post transfusion.
- Every Trust must review its Major Haemorrhage Protocol to ensure that it is compliant with the recommendations of the NPSA Rapid Response Report 'The transfusion of blood and blood components in an emergency' NPSA/2010/017.