

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

Learning Points for Clinical Staff	Notes/Action
<ul style="list-style-type: none"> ■ Patient ID should be confirmed with the patient or carer on admission, ensuring that names, date of birth and hospital number are correct, and that a search for previous records is carried out. ■ If used appropriately, antibody cards can prevent DHTRs. However, patients need to understand the importance of this information, and need to be encouraged to show them to hospital staff on admission, and certainly if a transfusion is required. ■ 'New' patients with sickle cell disease are likely to have been tested and possibly transfused elsewhere. They are at higher than average risk of developing red cell antibodies and where possible hospitals should actively seek a transfusion and antibody history. ■ Wristbands must be issued and worn and should contain standard patient ID details in accordance with NPSA SPN 24 (standard wristbands improves patient safety) ■ A bedside check between the patients ID wristband and the label on the blood component is essential to prevent component administrative errors. Any other checking or signing of documentation is secondary and does not constitute the patient ID check. If there is no wristband the transfusion should not commence. ■ No wristband (or alternative patient ID) = NO transfusion. ■ No clinical staff should transfuse components that are unlabelled or without a patient ID tag, unless specifically marked as 'flying squad' blood. ■ Anaphylaxis should be managed according to the guidelines set out by the UK resuscitation council. Patients should be transfused only where there is a member of staff present who is trained in the management of anaphylaxis and has access to appropriate treatment, particularly intramuscular adrenaline. ■ Documentation of the prescription must be available, the component prescribed, the dose and rate of transfusion given, and special requirements and this must be checked by the staff administering the blood component transfusion. However, this does NOT constitute the bedside patient ID check. ■ Pre-transfusion baseline observations must be documented, and the patient must have observations at 15 minutes and regularly throughout the transfusion. It must be possible to observe the patient easily in the ward. ■ It is essential to have positive identification using the patient's wristband to label the sample tube at the bedside, however familiar the patient. Doctors are responsible for a disproportionate number of sample errors and must be educated in the critical importance of patient ID for every medical intervention. 	

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

- Documents generated by the same system at the same time, e.g. crossmatch labels and compatibility forms generated by the laboratory IT system on to the PiMS system can never be usefully checked against each other at the bedside.
- The compatibility form or prescription sheet should never be used as part of the final patient identification check.
- Junior doctors need to use their clinical acumen and knowledge when prescribing therapies, and need to be prepared to question results that do not fit the clinical picture
- Medical staff must have sufficient transfusion knowledge to understand the implications for special requirements of some medical therapies and interventions. This directly affects doctors working in haematology, oncology, paediatrics and obstetrics but must include doctors on call and cross-covering.
- TACO is potentially avoidable in many cases. Doctors should consider whether transfusion is appropriate and also take note of concomitant medical conditions that increase the risk. The use of diuretic cover for blood transfusion is likely to reduce the risk of TACO and should also be considered.
- Nurses should monitor the patient's clinical condition during and after the transfusion as TACO may occur during or up to 24 hours after transfusion. This was a main SHOT recommendation last year and has been highlighted in new BCSH guidelines on blood administration. It is also important to monitor the rate of transfusion and fluid balance as these factors influence the risk of a patient developing TACO.
- Medical staff need to be aware of groups who need special attention, such as infants for cardiac surgery who may require irradiated components. Transfusion education must cover special requirements in paediatric conditions.
- A robust process must be in place for ensuring that the laboratory is aware of the need for irradiation, before transfusion is required.
- Inappropriate prescriptions, especially in terms of rate and volume of component, are an ongoing problem that can lead to significant morbidity and mortality, and this needs to be further highlighted during junior doctor training.
- As errors were disproportionately higher for the < 1yr age group all professionals need to pay particular attention when involved with transfusions for these patients. There continue to be reports of adult flying squad blood being given to neonates in obstetric units, and confusion between twins on neonatal units.
- Clinicians investigating suspected viral TTIs should explore all possible risk exposures (e.g. surgery, or discuss with the patient any sexual risks, injecting drug use, occupational exposure) in parallel with the blood service investigations.
- The recommendation that patient HLA, HNA and HPA studies should only be performed in selected cases, after discussion with a blood service consultant, still stands.

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

Learning Points for Transfusion Laboratory Staff	Notes/Action
<ul style="list-style-type: none"> ■ New BCSH guidelines on compatibility procedures in blood transfusion laboratories are in progress. These guidelines will simplify blood group requirements post PBSCT/BMT in line with EMBT (European Group for Blood and Marrow Transplantation) guidelines. ■ Errors are still being made in using inappropriate samples. Computer warning flags are a useful tool but must be backed up with strong theoretical knowledge. New BCSH Guidelines on compatibility procedures in blood transfusion laboratories are in progress. These guidelines will simplify sample age requirements. ■ Mistransfusion is often a result of multiple errors. It is important to investigate these incidents thoroughly by performing a full RCA so that all appropriate CAPA can be instigated. ■ Assessment of staff working in the transfusion department must cover competency in the provision of blood components for specific groups of patients, and understanding the importance and use of 'special requirements' flags. ■ Laboratories must give thought to the nomenclature used to describe phenotype requirements. It may be prudent to simply state the antigens that the red cells should lack, rather than use Weiner terminology, for example, which requires interpretation. ■ It is imperative that staff are vigilant at all times when participating in the patient identification process, especially when the patient is admitted, in the laboratory and in clinical areas. ■ Where feasible all samples tested by manual methods should be tested using an automated system as soon as possible. Consideration should be given to: <ul style="list-style-type: none"> ● adding a second check if manual groups are performed; ● reassessing the use/availability of automation/IT to add security to manual methods, e.g. automated readers. ■ Testing an eluate is an important part of investigating an HTR. ■ Staff should be extra vigilant in emergency or high risk situations, e.g. when IT systems are down. ■ Fridges should be cleaned at regular intervals by trained and competency-assessed individuals and should be well documented in the local SOP. It is the responsibility of the laboratories to monitor that this is being done as per the SOP and take effective CAPA if it is not being carried out effectively. ■ Red blood cell components should not be issued when there are 4 hours or less before their expiry time – the expiry date must be checked by the laboratory staff before the component leaves the hospital transfusion laboratory. 	

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

General learning points	Notes/Action
<ul style="list-style-type: none"> ■ Presence of an alloantibody does not prove cause and effect. ■ 'New' patients with sickle cell disease are likely to have been tested and possibly transfused elsewhere. They are at higher than average risk of developing red cell antibodies and hospitals should actively seek a transfusion and antibody history. ■ Where care is shared between hospitals there should be a system for communicating important serological information between sites. ■ All components arriving in a hospital with a transfusion laboratory should go to the laboratory first, to be booked into the inventory and issued using the hospital system to maintain traceability. This applies to emergency deliveries as well as transfers of units for individual patients. ■ Hospitals should have SOPs for inter-hospital transfer of blood components. ■ No wristband – no transfusion. ■ The compatibility form must not be used as part of a 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. ■ Electronic devices are an aid to correctly reading and matching long barcodes, but staff using them must understand that the IT in itself cannot prevent errors. ■ 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. ■ Blood components should be removed from CTS only when the transfusion is ready to commence, i.e. the patient is available, venous access has been checked and the component has been prescribed. ■ It is essential to have positive patient identification using the patient's wristband to label the sample tube at the bedside, however familiar the patient. Doctors are responsible for a disproportionate number of sample errors (see SHOT report 2008) and must be educated in the critical importance of patient ID for every medical intervention. ■ A full RCA should be performed on all errors that led to a SHOT reportable incident and appropriate CAPA instigated. ■ When new components are introduced, training must be given to all staff to allow thorough familiarisation with the component appearance, label and specification. 	

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

- NHSBT should review the packaging of components that look similar, to assess whether they could be more easily identified, particularly when those components are often used in emergency situations.
- Only staff who have been trained and competency assessed must be involved in any part of the transfusion process.
- Use of electronic blood tracking systems does not prevent errors occurring, particularly when staff use the override facility or ignore warning signals and alarms.
- The expiry date must be checked by the laboratory staff before the component leaves the hospital transfusion laboratory and by the clinical staff as part of the pre-administration check before transfusion.
- Transfusion of a blood component should be completed within 4 hours of leaving controlled temperature storage (CTS).
- A unit of RBC removed from CTS but not started within 30 minutes can still be administered provided the transfusion can safely be completed within 4 hours of leaving CTS. In this scenario the case is not reportable either as a Serious Adverse Event (SAE) to MHRA or as a handling and storage error to SHOT.
- A unit that has not been transfused CANNOT be returned to CTS for storage or reissue if it has been out of CTS for more than 30 minutes. If a unit is replaced into CTS after 30 minutes, then this is reportable as an SAE to MHRA, and if subsequently transfused then it is also reportable to SHOT.
- Anti-D Ig may still be at least partially effective if given up to 10 days following the potentially sensitising event and should not be withheld even if 72 hours have already elapsed.
- Acute transfusion reactions can occur at any time during the transfusion. Patients require careful observation throughout the transfusion process.
- It is striking that, despite concern among clinicians over the risks of transfusing patients who are IgA deficient, there have been no ATR reports related to this in 2009, and only 1 case in the last 5 years. Many aspects of IgA deficiency are in need of further study. In order to determine the true significance of deficiency, and hence produce appropriate guidelines, it is recommended that IgA is measured in all cases of severe allergy or anaphylaxis.
- MCT is the recommended laboratory test to aid in the diagnosis of anaphylaxis, although it does not contribute to management in the acute phase. Patients who have been diagnosed with anaphylaxis should be considered for referral to an allergy clinic for advice on managing future reactions.
- Components containing any residual red cells can elicit an immune response.
- The patient's clinical condition can obscure the diagnosis of an acute haemolytic reaction.

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

Learning points related to IT	Notes/Action
<ul style="list-style-type: none"> ■ Training and competency-assessment in the laboratory must cover basic manual checking procedures to ensure that these are second nature at a time when automation and computerisation will have lessened experience and practice in these basic skills. ■ The IT system should be configured to flag a component discrepancy between that ordered and that issued, and this should be fully validated. If this is not possible locally then these development requirements must be raised with LIMS suppliers. <p><i>The following learning points from previous reports remain pertinent:</i></p> <ul style="list-style-type: none"> ■ Simple yet robust procedures must be in place for recording transplant details. Use of a 'shared care' document is helpful but the information from this document must be clearly recorded in the LIMS. ■ Selection of blood and blood components post transplant, including thorough consultation of the patient's history/warning flags/notepad entries, must be included in competency-assessments. ■ Use of automation and IT can increase the security of testing but only if the messages/flags given are heeded and acted on appropriately. It is disappointing to report a number of examples this year that involve qualified staff overriding information, leading to the transfusion of what could be unsuitable units of blood. It is important that staff understand all warning messages and the necessary, appropriate actions to take following warnings. ■ Competency-assessment must comprehensively cover the areas of phenotype selection, antibody history and appropriate use of EI. ■ Competency-assessment must comprehensively cover all warning messages from analysers and the LIMS and staff must be able to demonstrate appropriate actions. ■ Transfusion laboratories must have thorough search strategies when looking for patient histories in order to find and reconcile multiple entries for a patient. ■ Simple yet robust procedures must be in place for recording special requirements. Use of a 'shared care' document is helpful but the information from this document must be clearly recorded in the LIMS. ■ Once informed of the need for a special requirement the laboratory must ensure that the requirement is consistently met without the need for further prompts. 	

Learning Points from the 2009 Serious Hazards of Transfusion Annual Report

Learning points specific to Paediatrics	Notes/Action
<ul style="list-style-type: none"> <li data-bbox="114 264 1805 416">■ The proportion of reports that were paediatric, and their pattern, was similar to before. This year the types of ATR in children were fairly similar in distribution to adults, partly reflecting an increase in the number of reports of febrile reactions to red cells. In contrast to previous years, there were no reports of haemolysis following transfusion of group O platelets to non-group O recipients. As before, there were few adverse reactions reported in the neonatal and infant age groups; clinicians need to be alert to possible paediatric transfusion reactions, highlighted this year by the missed bacterial contamination of platelets given to a neonate. <li data-bbox="114 448 1805 536">■ Errors in neonatal pre-transfusion testing continue to occur in the laboratory, emphasising the need to check the maternal results and to follow the BCSH transfusion guidelines for neonates and older children (2004). Future guidelines should further clarify the length of time that the maternal sample should be used for red cell compatibility testing in situations where there is a maternal antibody present. <li data-bbox="114 568 1805 783">■ Children frequently have special transfusion requirements. The recent BCSH guidelines on the administration of blood components (2009) separated these into clinical special requirements, defined by the patient's underlying condition, as opposed to automatic special requirements for a particular age group. The former will always require notification by clinicians, but the latter should be flagged for and automatically provided by the laboratory. The varied causes of the recurrent paediatric SRNM cases include missed or erroneously removed laboratory flags and inadequate clinical processes with lack of communication of special requirements to the lab and inadequate bedside checks. There is need for continuing education and awareness, laboratory IT systems that reliably retain special requirement flags, and better clinical communication systems such as improved prescription chart design to facilitate adequate prescribing. <li data-bbox="114 815 1805 935">■ The requirement for irradiation of neonatal red cells following IUT needs particular emphasis, both for clinicians and laboratory staff. As transfusions to affected neonates may take place in a different hospital to the IUT, adequate communication between hospitals is vital. It is also important that the parents are informed that transfusions given to the baby would need to be irradiated, and that they are given an irradiation card. <li data-bbox="114 967 1805 1054">■ There were a striking number of reports of over-transfusion and this is a concerning recurrent issue. Although some were due to incorrect prescription including specifying units rather than a specific volume as previously, there were several nursing errors in setting up infusion pumps. <li data-bbox="114 1086 1805 1174">■ There are repeated reports of confusion over 'flying squad' blood, particularly the use of obstetric adult 'flying squad' blood for neonates. There need to be rigorous local procedures and training to ensure that red cells for neonatal resuscitation are available, clearly distinguishable from obstetric emergency blood, and that nurses and doctors are aware of the distinction. <li data-bbox="114 1206 1805 1294">■ The case of a neonatal transfusion which took 4 hours and 45 minutes is a reminder that although neonatal transfusions frequently take 4 hours, for this group it is still emphasised that there should be no more than 30 minutes between removing the component from the temperature controlled environment and starting the transfusion; the transfusion itself should take no more than 4 hours. 	