

Key Messages and Recommendations **4**

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In every year of SHOT reporting, now 21 years, most incidents result from mistakes, often multiple, in the transfusion process. Training in basic blood group systems must not be overlooked, and continued removal of humans from the process by the use of information technology solutions can improve safety. Assumptions must not be made from one step to the next in the nine steps in the transfusion process. Verify and check.

Transfusion-associated circulatory overload (TACO) and other pulmonary complications remain the most commonly reported cause of major morbidity and death. The national comparative audit of TACO performed in 2017 included 2461 inpatient and 2119 outpatient transfusions in patients over 60 years of age (NCA 2018). Only 20.5% of inpatients were risk-assessed for TACO; fewer had assessments between units or haemoglobin checks although 89.2% of patients had at least one risk factor for TACO in addition to age. These findings indicate that more education about TACO is needed and the audit report recommends that a formal pre-transfusion risk-assessment should be included in hospital transfusion policies. We have therefore included this as our third key recommendation for 2017.

Key SHOT messages

- Guidelines or rules? Guidelines must not be translated into inflexible rules which may put patients at risk. Proportionate application of knowledge and experience may lead to a different course of action in individual circumstances. However, the final bedside check is a rule and must be completed in full
- Basic training: It is essential that all staff participating in transfusion fully understand ABO groups so that they can recognise potential ABO-incompatibility
- Information technology (IT) systems have the potential to increase transfusion safety by minimising human factors and should be considered for all transfusion steps
- Patients who develop respiratory distress during or up to 24 hours after transfusion where transfusion is suspected to be the cause must be reported to SHOT. The national comparative audit of TACO in 2017 demonstrated that risk factors are being missed

Guidelines are not rules

British Society of Haematology (BSH) and other guidelines are valuable tools to encourage safe practice but must be interpreted in the light of an individual patient's clinical circumstances (Shah and Cifu 2018). We noted before that the guidance to avoid transfusion at night was interpreted wrongly as 'never transfuse at night' since for some patients with urgent clinical indications this must not be delayed (see also key message and Case 11a.3 in Chapter 11, Avoidable, Delayed or Undertransfusion (ADU)).

Patients should not die from bleeding or anaemia. Experienced clinicians can make appropriate decisions about concessionary release of alternatives (Case 11d.2). Delayed transfusion for patients with antibodies has resulted in death (Case 11a.1). In other cases, early consultation with senior colleagues may have averted serious consequences (Cases 11a.7, 11a.10). Rigid adherence to guidelines can promote wrong practice (Cases 14.2 and 14.3 in Chapter 14, Adverse Events Related to Anti-D Immunoglobulin (Ig)).

Knowledge of basic ABO and Rh blood group systems

Although the absolute number of ABO-incompatible transfusions has decreased with time, the number of near miss events that could have resulted in an ABO-incompatible transfusion (n=606 in the past 2 years) demonstrates the danger below the surface. Many incidents can be prevented by the final bedside check, as noted several times in Annual SHOT Reports and now endorsed by the Chief Medical Officer (DH 2017). There is no excuse for omission of this safety check.

An ABO-incompatible transfusion reported in the 2015 Annual SHOT Report (Case 6.1) had 12 different errors (Bolton-Maggs et al. 2016). The biomedical scientist selected incompatible units and the laboratory information management system (LIMS) permitted their electronic issue (not validated adequately after an upgrade). This incompatibility should have been detected at the bedside (group B units to a group O patient) but this was not detected on three separate occasions by at least two different nurses as the patient received all three units (across a shift change). This and other reports demonstrate that there is a lack of adequate knowledge of basic ABO and D blood group systems. A compatibility check is an essential part of the bedside process. This year we noted 4 ABO-incompatible transfusions of fresh frozen plasma (FFP), group O FFP to non-group O patients. LIMS should be set up to prevent release of group O FFP to any patients other than group O; for further details see Chapter 10, Incorrect Blood Component Transfused (IBCT). It is not sufficient for clinical staff to think it is only the responsibility of the transfusion laboratory staff. Similar facts apply to knowledge of a patient's specific requirements, it is the responsibility of the clinician authorising the transfusion to know these, and the person administering the transfusion to check.

Key recommendation 1

- Training in ABO and D blood group principles is essential for all laboratory and clinical staff with any responsibility for the transfusion process. This should form part of the competency assessments

Action: Hospital Chief Executives and Medical Directors, National Blood Transfusion Committee, Hospital Transfusion Teams

Information technology

The summary of the Annual SHOT Report for 1999-2000 noted that 'information technology will prevent human error' (Love et al. 2001) and recommended that computerised identification systems which ensure safe transfusion at the bedside 'should now be evaluated'. From 2006 the Annual SHOT Reports have included a chapter giving details about incidents where IT was implicated. These reviews have been informative and show that IT needs to be set up properly, and that human work-arounds can still result in error. IT systems are vulnerable to cyber-attack so there remains a need for manual back up. Despite these apparent disadvantages IT systems play an important role in transfusion safety, not only the essential role of LIMS but also vein-to-vein electronic blood management systems. These are of proven benefit and are recommended in the United Kingdom Transfusion Laboratory Collaborative (UKTLC) standards (Chaffe et al. 2014). Further information and justification and references are available in Chapter 12, Errors Related to Information Technology.

Key recommendation 2

- All available information technology (IT) systems to support transfusion practice should be considered and these systems implemented to their full functionality. Electronic blood management systems should be considered in all clinical settings where transfusion takes place. This is no longer an innovative approach to safe transfusion practice, it is the standard that all should aim for

Action: Hospital Chief Executives, Hospital Risk Managers and Hospital Transfusion Teams

Transfusion-associated circulatory overload

Respiratory complications remain the most common cause of major morbidity and death related to transfusion (Figures 3.2 and 3.3). Clinical staff should assess each patient prior to transfusion. Risk factors are not being recognised, and some cases of TACO are preventable.

Key recommendation 3 (repeated from last year)

- A formal pre-transfusion risk assessment for transfusion-associated circulatory overload (TACO) should be undertaken whenever possible, as TACO is the most commonly reported cause of transfusion-related mortality and major morbidity

Action: All staff authorising transfusion

References

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