5.1 Errors related to IT systems

As noted in last year's report, problems with IT systems (or their incorrect use) continue to cause IBCT incidents. In 2006, there were 27 cases (28 errors) that led to the transfusion of an incorrect component (see Table 17).

Table 17

Error	No. of reports	Non-irradiated unit transfused	Antigen positive unit transfused	Non-CMV Neg unit transfused	Other	BMS works routinely in Lab
Records not merged	6	2	4	0	0	3/6
Computer system 'down'	6	3	1	1	1 (transcription error)	6/6
Historical record not consulted	3	2	1	0	0	2/3
Protocols for searching previous records insufficiently flexible	3	3	0	0	0	2/3
Ignored warning flag	2	1	1	0	0	1/2
Data not transferred from old system	1	0	0	0	1 (ABO mismatch)	1/1
Failure to update warning flags	1	0	0	0	1 (MB-FFP for a child)	0/1
Inappropriate electronic issue	6	0	4	0	2 Protocol violations	5/6

Patients often acquire multiple hospital numbers (4 in one instance) and case records. It is essential to merge records regularly so that warning flags are not missed by accessing the 'wrong' computer record. Implementation of the NHS number, as recommended by NPSA[13] , will reduce this risk.

'Down time' on the laboratory computer system, making the transfusion record inaccessible, was responsible for 6 incidents. In 1, mis-transcription of a phoned Hb result led to an inappropriate red cell transfusion. During scheduled down time, non-essential transfusions should be avoided and it is important to have robust back-up and recovery procedures.

In 3 cases the BMS did not consult the historical record and, in a further 3 cases, an inappropriate search strategy failed to locate previous records with a warning flag. In 2 cases the warning flag was ignored or overridden for unclear reasons. In more than half of these cases (5/8) the BMS worked regularly in the transfusion laboratory.

Warning flags indicating requirement for newly available components were not updated and, as a consequence, a child under 16 years did not receive non-UK sourced, virus-inactivated FFP.

An ABO mismatch transfusion could have been prevented by transferring data from the old to the new laboratory computer system as the blood group discrepancy would have been noticed.

The development of IT links between blood transfusion laboratories in different hospitals would significantly reduce the number of cases of IBCT (mainly failure to administer irradiated products) when patients with special requirements are transferred between institutions. In 2006, 12 of the 77 (15.6%) cases of failure to supply irradiated products could have been prevented in this way. (This is unchanged since 2005 when 16% of 'preventable' cases were reported.)

There were 6 cases where red cells were issued inappropriately by electronic selection in contravention of national guidelines and local policies. Four of these led to the issue of red cells incompatible with a known alloantibody. In all

4 cases electronic selection was performed despite a positive antibody screen result. In 1 of these cases the laboratory computer system cannot automatically prevent issue if a positive antibody screen is detected but relies on manual entry of 'not for computer compliant issue'. The other 2 violations involved electronic issue despite inadequate clinical details and issue based on results from a specimen number more than one-year-old (allowed by the computer system). Five of the 6 laboratory staff involved in these cases worked routinely in the laboratory.

Learning points

- Merging of computer records is essential for safe practice. Laboratories should review their procedures and ensure that they have robust procedures for merging of records by appropriately trained and competency-assessed staff. Ultimately, the problem of multiple hospital numbers and case records should be reduced by routine use of the unique NHS Number as a primary patient identifier in line with the recent recommendation from the National Patient Safety Agency[13].
- When laboratory IT systems are 'off-line', non-essential transfusions should be avoided. Robust manual back-up procedures and recovery plans must be in place and tested.
- Laboratory IT systems should be designed to ensure that 'warning flags' are prominently displayed, preferably on the opening screen, and cannot be overridden or bypassed.
- Staff must be trained in appropriate search strategies to ensure that all relevant records are accessed.
- Transfusion laboratories should have direct access to the hospital Patient Administration System and / or pathology results and the ability to review haematology results online (ideally on the same screen).
- When new laboratory IT systems are installed, patient data from the old system should be transferred as a matter of urgency to the new system. Wherever possible this should be done electronically to minimise the risk of transcription errors (see SHOT Annual Report 2005).
- Where historical records were not checked or inappropriate search strategies used, more than 50% involved biomedical scientists who work regularly in the transfusion laboratory. This problem is clearly not confined to 'on call' or rotating staff. Laboratories must ensure that all staff using the IT systems have appropriate training, updates and documented competency assessment.
- Poor communication around the transfer of patients between hospitals remains a significant cause of error. As noted in previous SHOT Annual Reports, the development of IT links between transfusion laboratories, or access to an electronic patient record (EPR) containing accurate and up-to-date transfusion data, would significantly reduce the number of IBCT due to special requirements not being met. This would also impact on delayed haemolytic transfusion reactions caused by blood group alloantibodies that have fallen to undetectable levels. The UK Connecting for Health project has the potential to meet these needs but the question of how and when transfusion data is entered on the EPR must be resolved.
- All laboratories using electronic selection to issue red cells must ensure that their operating procedures are consistent with national guidelines and followed by laboratory staff[14]. The computer algorithms in use must prevent issue outside the guidelines.
- IT systems that support transfusion safety, monitoring and traceability outside the laboratory (e.g. blood-tracking systems and bedside ID systems) should be integrated with laboratory systems and processes. Laboratory staff must be fully trained in relation to these systems and be able to provide support and advice to clinical areas on a 24/7 basis.

Further details of requirements for IT standards and specifications for transfusion can be found in the relevant BCSH and NPSA guidance[15,16].