Summary of Errors Related to Information Technology (IT) n=236

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This chapter covers transfusion adverse events that relate to laboratory information management systems (LIMS) as well as other information technology (IT) systems and related equipment used in the delivery of hospital transfusion services.

Key SHOT messages

- Hospitals using electronic blood management systems should review the individual use of 'emergency' procedures used to bypass the built-in checks whether at the bedside or when collecting blood from the refrigerator. There should be immediate retraining of staff using the system incorrectly
- Hospitals should work with the manufacturer to develop safe and robust emergency protocols, which prevent blood delay but still provide full traceability and effective bedside 'right blood right patient' checks

The cases included are drawn from the other chapters of this report as shown in Table 12.1. Cases selected include events where IT systems may have:

- Caused or contributed to the errors reported
- Been used incorrectly
- Prevented errors but were not used

Where the corrective and preventative action suggested by hospitals in response to errors included IT solutions these have been included if they illustrate an important point.

In 2014 there were 236 (247 including anti-D errors) reported incidents of errors related to IT systems (Table 12.1). Breakdown of the 2013 numbers is shown for comparison: The increase in SRNM errors related to those where the primary error was outside the laboratory if it was considered that specific requirements might have been met if IT flags or alerts had been used in the laboratory. RBRP included any cases where incorrect data was recorded on one or more computer systems.

Error	2013	2014
Incorrect blood component transfused laboratory (IBCT-WCT)	8	15
Incorrect blood component transfused clinical (IBCT-WCT)		7
Specific requirements not met laboratory (SRNM)	36	49
Specific requirements not met clinical (SRNM)	81	79
Right blood right patient (RBRP)*	51	57
Avoidable, delayed and under-transfusion (ADU)	2	12
Handling and storage errors (HSE)	9	17
Total	**187**	**236**
Anti-D Ig errors	16	11
Total including anti-D	**203**	**247**

**the multiple incidents (n=273) related to the Haemonetics BloodTrack system are counted as one case*

Table 12.1: Source of cases containing errors related to IT

Table 12.2: Area of origin n=236

Area	Number of cases	%
Laboratory	104	44.1%
Clinical	132	55.9%
Total	**236**	**100%**

Table 12.3: Time of day where known n=151

Time by 24h clock	Number of cases	%
Core 08:00-20:00	117	77.5%
Out of hours 20:00-08:00	34	22.5%
Midnight onwards 00:00-08:00	16	10.6%
Total	**151**	**100%**

A total of 195/236 (82.3%) cases involved red cells, 20/236 (8.5%) involved platelets and 20/236 (8.5%) related to plasma components with an additional 11 due to anti-D immunoglobulin (Ig).

22/236 (9.3%) cases with IT errors occurred in children (8 were infants below the age of one year).

Where the urgency of the request was available 146/208 (70.2%) of the transfusions were considered routine, 47/208 (22.6%) urgent and 15/208 (7.2%) were emergencies. In 28 cases the urgency of the request was not stated.

Incorrect use of a bedside blood tracking system (273 units and 105 members of staff)

One hospital reported multiple failures of the 'right blood right patient' bedside check related to the incorrect use of a bedside tracking system and below is the report provided which explains the nature of the error.

A cause for concern – the hospital report January 2015 (included with permission from both the hospital and Haemonetics)

We have been using the BloodTrack SafeTx electronic system from Haemonetics for the past 5 years and we transfuse in the region of 35,000 units per annum. Using this system we have a traceability figure of 99.7% as opposed to 86% using a manual paper-based system.

A third of these transfusions are carried out using the EMERGENCY TRANSFUSION option, most of which are carried out in theatres and the emergency department (ED). The decision to use this option was made by these clinical areas primarily to avoid the need to record observation at each stage of the process, thus speeding up the procedure. Consideration has been given to removing the 'observations' option from the devices used in these specific areas but this would have caused problems when devices are swapped between different clinical areas.

When the emergency option is chosen, after scanning the patient's identification band, the user encounters the following screen:

At this juncture the screen asks the user to either

(a) scan the compatibility label which is attached to the units or

(b) '**Or Tap Here To Give Emergency Blood**' if using the **emergency O Rh D-negative blood** which of course does not have a compatibility label. When this second option is chosen, the built in 'right blood right patient' safety checks are quite correctly bypassed by the system.

Since February 2014 we have been auditing every single unit, which has been transfused using the EMERGENCY TRANSFUSION option, and these are the results.

Between February and October 2014 a total of 273 units (average of 30 units/month) were transfused using the wrong option whereby the 'right blood right patients' safety checks were bypassed in error. The user had not scanned the compatibility label as they should have, but instead had chosen the '**Or Tap Here To Give Emergency Blood**' option even though they were not using the emergency O D-negative. A total of 105 staff were involved.

An incident report was raised on each occasion and the member of staff involved was contacted by email. A one-to-one retraining session was conducted, where the potential gravity of their error was reinforced. There were no repeat offenders identified. The message is beginning to get through, since the numbers for November and December 2014 are encouraging. Only 2 units were transfused using the incorrect option in November, and 13 units in December. This error occurs both when only 1-2 units are given and when multiple units are given i.e. major haemorrhage.

The company (Haemonetics) has acknowledged this potential weak link in an otherwise very safe system, and has made assurances that it will be rectified in the next software version due in June 2015. In the meantime we intend to continue with our present policy of raising an incident report and conducting one-to-ones with the individuals concerned, every time it happens.

Electronic blood tracking systems are designed to reduce human error at the bedside. However, all staff must be trained to use the system safely and in the manner for which it was intended. The Emergency Blood option was intended for emergency group O units that did not have a compatibility label attached to them but in this situation it was used to avoid having to enter observations because they were being recorded elsewhere.

COMMENTARY

As noted above the company has responded to this incident (and an additional report from a different hospital). They note that 'the Emergency Transfusion protocol is meant to be faster and only meant to be used for emergency situations. It removes completion of configuration checklists and removes entering of vital signs. By using the '**or tap here to give emergency blood**' button the user is telling BloodTrack Tx that there is no compatibility label to scan and that the unit is an uncrossmatched unit. Use of this process for non-emergency transfusions is misuse resulting in bypassing the important safety step of checking that the unit is actually intended for the patient'. The company have taken the following actions:

- Root cause analysis of the incident above
- Review other sites to determine whether this issue is occurring elsewhere
- Sent an advisory letter to all customers reminding them of correct use and confirmation of the next release of software which will include enhancements to the Emergency Blood protocol

Deaths

There were no transfusion-related deaths where IT systems contributed.

Potential for major morbidity

There were two cases with potential for major morbidity due to alloimmunisation in women of childbearing potential.

Major and minor morbidity

There were no cases where IT systems contributed to major or minor morbidity

There were 4 cases where incorrect use of IT systems contributed to alloimmunisation but with no haemolytic transfusion reaction.

No harm

All the other cases did not result in any harm to the recipient of the components transfused.

COMMENTARY

An increasing number of cases are reported each year where the use or misuse of IT systems played a part (Figure 12.1). These are more often caused by human factors, such as inappropriate set up and work-arounds, as in the RBRP cases where set up of the IT system permitted use of the emergency button for routine transfusions, or by overriding flags or not setting them up in the first place. Cases of IT malfunction are, by contrast, very rare. However it is essential that users work closely with developers of any IT system to remove design faults before these translate into system faults and incidents of potential or actual harm.

Figure 12.1: IT cases 2007-2014