SHOT Bite No. 13:
Information Technology in Transfusion – Highlights and Lessons

SHOT Serious Hazards of Transfusion

Impact of information technology (IT) in healthcare

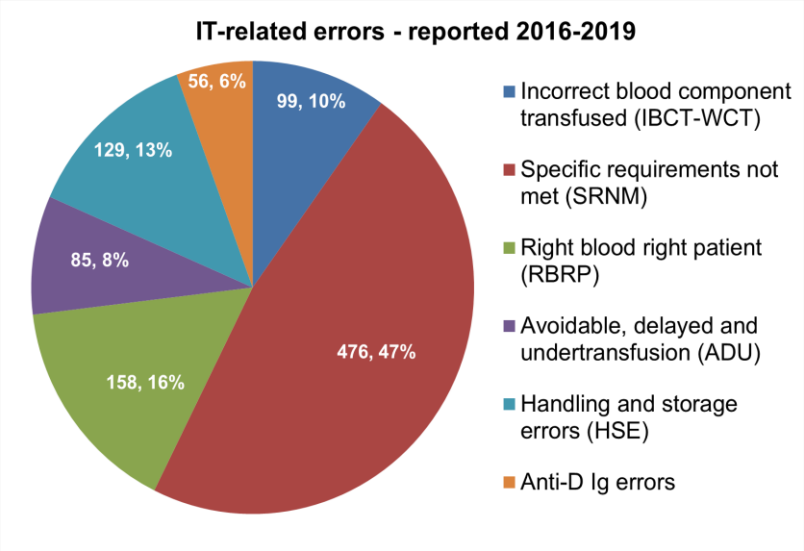
IT is increasingly used in the healthcare setting as a means to improve patient safety. NHS Digital provides the framework for harnessing the power of information technology to improve health and care. Electronic patient record (EPR), laboratory information management systems (LIMS), blood storage temperature monitoring and electronic blood tracking systems have all been shown to be effective in reducing errors in the transfusion pathway.

However, these systems are only effective if configured, validated and utilised properly. Many errors have been introduced due to improper use/or incomplete assessment of IT interventions.

From 2016-2019 **1003** errors and **595** near miss events were reported relating to IT where:

- IT caused or contributed to the error
- IT systems were used incorrectly
- IT could have prevented error but was not used

Reports relate to a range of SHOT categories



Points of interest

LIMS functions can have unexpected consequences	• A case was reported where configuration of the LIMS for reporting GP samples unintentionally affected the electronic issue (EI) rules
Downtimes can result in delays in provision of blood	• One case noted a delay when the interface between the LIMS and blood-tracking system was down, found to be due to insufficient capacity of the server
Misunderstanding of system functionality can lead to delay	• Failure to use the EPR correctly for ordering prothrombin complex concentrates (PCC) led to a significant delay and contributed to death of a patient
Systems used for electronic sample labelling must support safe practice	• A patient was transfused in error based on an incorrect haemoglobin result from an order comms sample (WBIT). The order comms system allowed sample label generation away from the patient
Systems do not work if they are switched off	• Disabling of a blood refrigerator temperature alarm by an engineer led to transfusion of red cells units during a refrigerator failure event

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Further information on SHOT IT errors in 2019 can be found here

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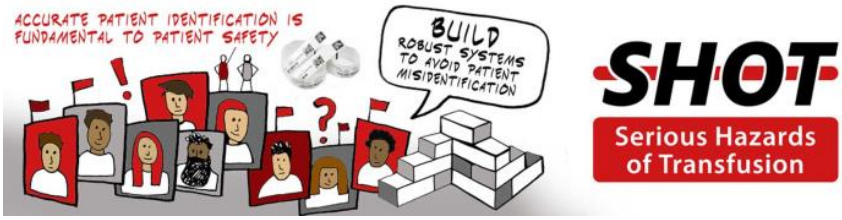
Summary of errors related to IT reported 2016-2019

IT-related error	Number of errors
Failure to use flags and/or logic rules	**217**
Warning flag not updated	**119**
Warning flag in place but not heeded	**109**
Equipment failure	**93**
Failure to consult or identify historical record	**84**
Errors related to electronic blood management systems	**72**
Incorrect result/data entered/accessed manually	**67**
Anti-D related	**56**
Computer or other IT systems failure	**49**
Failure to link, merge or reconcile computer records	**36**
Discrepancy between LIMS and PAS	**36**
Blood issued against wrong patient ID (sample or request form)	**36**
Miscellaneous	**29**
Total	**1003**

Patient identification

Patient identification is key at all stages of the transfusion process. To ensure safe practice IT systems must support:

- Use of the NHS number as a primary identifier
- Use of emergency patient identification compliant with NHS patient safety alert (NHS/PSA/RE/2018/008)
- Robust processes for identifying and merging duplicate patient records
- Interoperability and interfacing to reduce manual transcription between systems
- Security for sample labelling and administration, enforcing scanning of ID band at patient side



Lessons learnt

When setting up a new LIMS ensure:

- essential legacy data are transferred
- validation scripts are used to confirm acceptable functionality
- electronic issue rules are compliant with BCSH and MHRA requirements
- warnings/alerts are appropriate, understandable and not easily overridden
- appropriate compatibility rules are in place, particularly for emergency issue and complex patients, such as ABO-incompatible stem cell transplant

When validating a LIMS upgrade identify and test critical functions before approval into use

Electronic systems for sample labelling must support safe practice and have security steps for ensuring labelling at the patient side

Processes and contingency plans must be in place for safe practice during downtime periods

When implementing electronic blood tracking systems ensure:

- staff are trained to use the system correctly
- environmental and ergonomics aspects are considered that support effective use

August 2020

References:
BCSH (2006b) The specification and use of information technology systems in blood transfusion practice (https://b-s-h.org.uk/guidelines/)
MHRA Electronic issue of blood components 2010 (https://www.gov.uk/government/publications/electronic-issue-of-blood-components)