Information Technology in Transfusion
Learning from SHOT reports

Dr Megan Rowley
Consultant in Transfusion Medicine
Scottish National Blood Transfusion Service
SHOT IT chapter

SHOT started analysing IT errors in 2006
2 new SHOT IT experts: Jeni Davies and Alistair McGrann

Questions for today
1. What have we learned from SHOT IT reports?
2. What can SHOT do to support improvements in transfusion IT?
Information Technology Errors

Errors caused or contributed to by IT systems

Errors caused by using IT systems incorrectly

Errors where implementation of an IT solution would have/could have prevented the error

Corrective and preventative action in response to an error included an IT solution

Definitions for SHOT IT Chapter
SHOT Errors Relating to Information Technology

excluding anti-D and near-miss categories
213 reports of which 98 were IT flags, alerts and warning errors

- 29 LIMS or EBMS had a flag set but it was not heeded
- 38 flags not updated or removed in error
- 31 flags not set or the LIMS not able to flag the specific requirement
SHOT 1999-2000

INFORMATION TECHNOLOGY WILL PREVENT HUMAN ERROR

COMPUTERISED IDENTIFICATION SYSTEMS ARE AVAILABLE TO ENSURE SAFE TRANSFUSION AT THE BEDSIDE. THESE SYSTEMS MUST NOW BE EVALUATED.

THE NHS IT STRATEGY SHOULD TAKE A LEAD IN ASSESSING THIS AREA OF NEW TECHNOLOGY
SHOT IT RECOMMENDATIONS

• SHOT called for the increased allocation of resources to develop electronic “positive identification” systems to control the clinical transfusion process.

• Computer-based systems, employing technology for positive identification, will soon control the clinical transfusion process “from vein to vein”

• It seems essential that as multiple electronic ID systems are introduced to the clinical workplace, they share common standards, hardware and computer-links wherever possible.

• All of those developing systems should communicate effectively and work in collaboration for the benefit of patients and staff alike.
It is expected that:

1. All laboratories will have complete **walk-away automation** which is in use 24/7, with bidirectional interfaces to the LIMS. In the absence of complete automation, documented measures must be taken in order to mitigate procedural laboratory errors.

2. **Electronic issue of red cells** will be introduced when the laboratory infrastructure is robust and supports this procedure.

3. Where remote issue of components is being considered as part of service delivery, consideration will also be given to **installing complete blood tracking** (vein to vein) as an integral feature of this development.
UK NEQAS Annual Practice Questionnaire 2016

Overview of Automation and EI

UK TLC standards not achieved by all

Electronic Issue

Full automation for G&S
Electronic Patient Identification Systems

Only 46/252 (8.8%) have a ‘secure bedside electronic patient identification system’* in place

Table 11 – electronic patient identification systems in use

<table>
<thead>
<tr>
<th>System in use</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemonetics BloodTrack</td>
<td>25</td>
</tr>
<tr>
<td>Fordman Systems BARS</td>
<td>9</td>
</tr>
<tr>
<td>MSoft Bloodhound</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

*Defined as having barcoded wristbands with handheld barcode scanners and printers to allow secure bedside labelling of samples.
Promoting the benefits of existing IT systems

Validating IT systems to ensure they are working correctly

Training all clinical and laboratory staff to use systems correctly and as intended

Ensuring accuracy and security of data transfer across electronic interfaces

Themes identified from analysis of IT errors
Flags, Alerts and Warnings

Some are ‘hard wired’ into the LIMS or EBMS
• Preventing ABO incompatible red cell transfusion
• Preventing electronic issue of ineligible patients
• Logic rules based on age, gender for meet specific requirements

Some are ‘set’ on receipt of clinical information
• Specific requirements based on patient/disease characteristics

Role or competency-based access to systems
Standards for flags, alerts and warnings

Clinicians, laboratory scientists, information technology professionals and IT providers should work together to develop an industry standard for flags, alerts and warnings that prevent harm from wrong blood but still ensure timely and accurate availability of blood components for clinical use.

Action: IT/software providers with UK Transfusion Laboratory Collaborative

SHOT RECOMMENDATION 2016
Knowledge and Training

IT systems can make transfusion safer by supporting and controlling clinical and laboratory tasks but they do not replace knowledge about the supported task and are only safe if timely and accurate training to undertake the role is provided.

You can not rely on IT to replace knowledge – you need both
Human Factors

People circumvent the barriers and prompts!

• Override or ignore error messages for ABO-incompatible blood or specific requirements
• Use other people’s ID badges (or logon details) to gain unauthorised access

Reports of being unable to issue blood because of unfamiliarity with IT systems

• Results in delay
• Hit the emergency button!
What is the problem?

• Not all hospitals have implemented IT systems to support BT practice
• Where systems are implemented they are not being used to full functionality
• Not all systems are interoperable
• Not all systems keep up with developments in BT practice
• Insufficient training means systems are used incorrectly
“With increasingly complex care the increasing reliance on IT in healthcare can threaten patient safety”

• IT systems are often built in a siloed fashion

• Given the complex interactions of patients across multiple care settings, this poses a challenge for interoperability

• A lack of cohesiveness and integration across systems can increase the risk of patient harm.

• It is therefore essential to ensure that IT systems align with user needs and can communicate with each other

• IT systems can also become a burden for healthcare staff

Yu et al. 2016
Health information technology may:

• work well in one context/organisation but fail in another
• change how clinicians do their daily work and introduce new potential failure modes

The burden of proof should fall on the vendor to demonstrate to an independent certifier/regulator that a HIT system is safe, not on the customer to prove that it is not
But we need to **B** positive
SHOT Key Recommendation 2018

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
Survey of Implementation of 2017 recommendations #2- Clinical Electronic Blood Management Systems

- **Patient Identification at Sampling**
  - 26 have systems in place
  - 35 have submitted a business case

- **Collection of Blood Components from Storage Sites**
  - 83 have systems in place
  - 20 have submitted a business case

- **Patient and Component Identification at Administration**
  - 33 have systems in place
  - 36 have submitted business cases

126/222 responded (57%)
- England - 99
- Wales - 8
- NI - 7
- Scotland - 12
#2 - Clinical Electronic Transfusion Systems

9 said ‘time’ was a constraint to implementation

24 placed ‘cost’ as the main barrier to implementation

27 had successfully progressed this recommendation

18 had future plans to implement this recommendation

2 said competing priorities were a barrier to implementation

2 had risk assessed their process so not considering implementation
What can SHOT do to help?

Use the report!!
Share cases, examples, learning points, recommendations.....
IT Learning Points

• With increasing use of electronic patient records and electronic prescription of both blood components and chemotherapy, the possibility of synchronising specific requirements related to treatment should be considered. This would mean that flags, alerts and warnings present on one system could be transferred electronically to another system without the need for completion of additional specific requirements documentation.

• Several reporters suggested that a national register of specific requirements (SP-ICE) could be considered to support shared-care patients.
Proposed additional UK TLC minimum standard

It is expected that each transfusion laboratory has access to a subject matter expert for blood transfusion IT to support the specification, implementation, validation of the LIMS and interoperative systems that support blood transfusion safety. The SME should also support business as usual and ensure that system amendments and upgrades are appropriately tested and validated.
What else would help?

Robust guidance on IT systems relating to UK blood transfusion practice = BSH

Manufacturers/software providers to work with transfusion SMEs in a timely and collaborative way

Investment in equipment, IT systems and training - including training of SMEs
Summary

• IT is part of our everyday and working lives
• IT does make transfusion practice safer
• IT doesn’t always make transfusion practice easier
• SHOT will use its data to influence improvements and drive effective policy
• SHOT will find a way to upskill the transfusion community with respect to IT systems
Thank you

• To everyone who reports to SHOT
• To the SHOT team
• To my two new IT experts

• ANY QUESTIONS?
• meganrowley@nhs.net