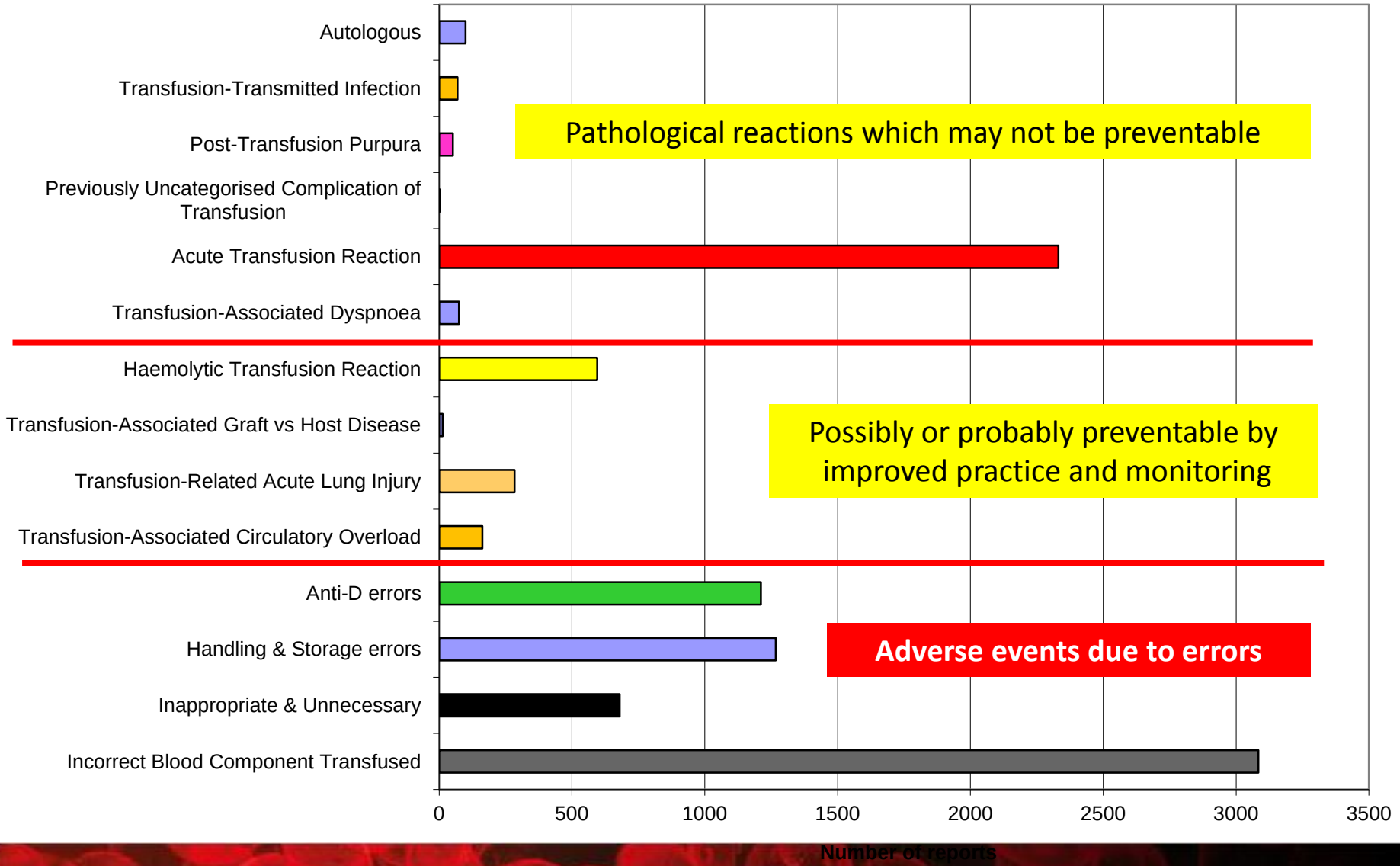
Laboratory-related transfusion errors Information Technology is not the complete solution

Christine Gallagher, Deborah Asher, Hema Mistry, Megan Rowley, Derek Norfolk and Paula HB Bolton-Maggs

Serious Hazards of Transfusion Office, Manchester, UK, on behalf of the SHOT Steering Group shot@nhsbt.nhs.uk

Cumulative data 1996/7-2011 n=9925



SHOT data 1996-2011

- 9925 SHOT reports
- 6242/9925 adverse events
- 2666/6246 (43%) laboratory errors

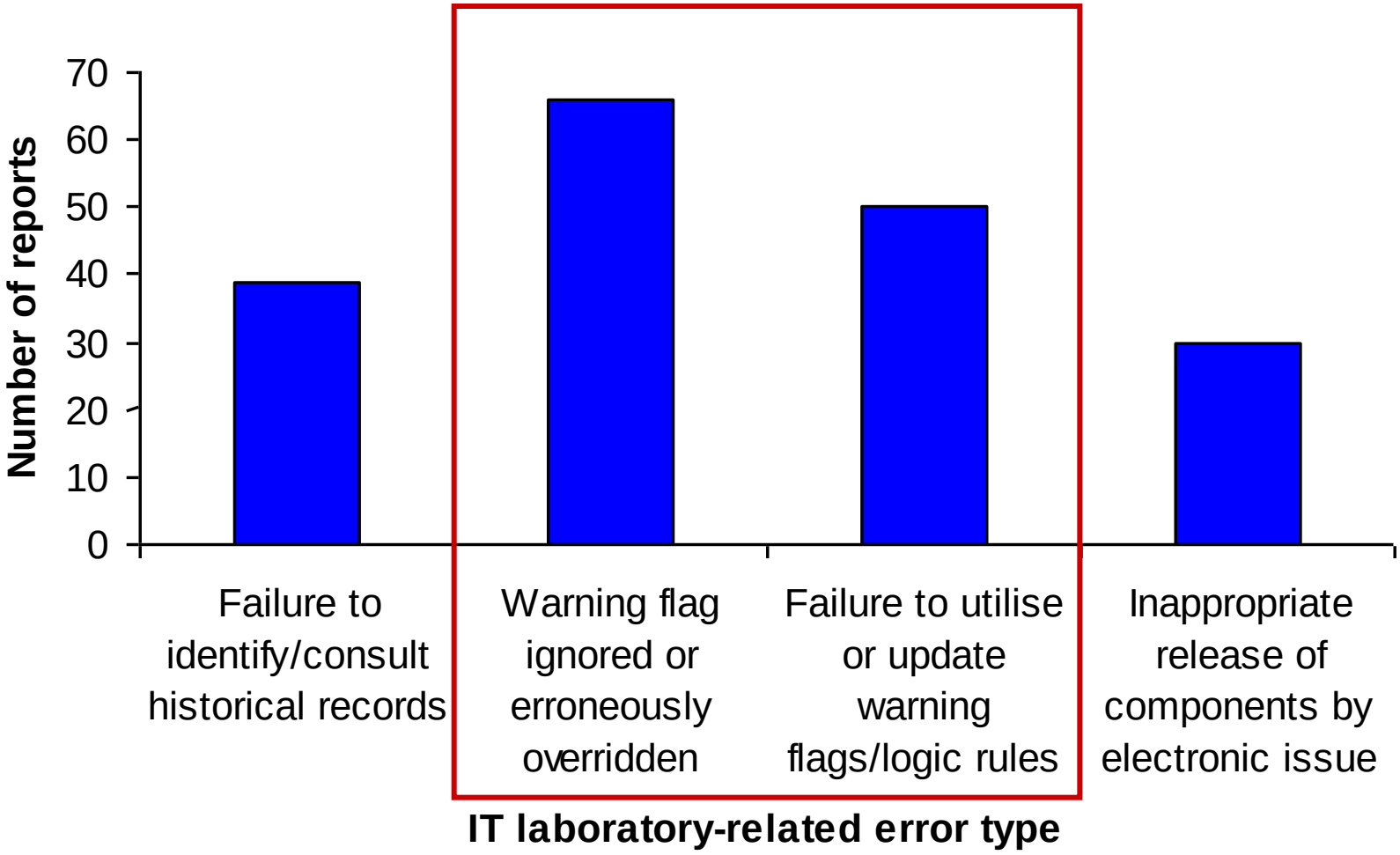
Laboratory-related errors 1996-2011

- 1745/2666 (66%)
  - resulted in the transfusion of an incorrect blood component
- 404/2666 (15%)
  - transfusions where inappropriate handling or storage rendered the component less safe
- 517/2666 (19%)
  - errors related to the issue of anti-D immunoglobulin to women of childbearing potential

Subgroup analysis of lab and IT 2006-2011

Year	Lab-related reports	Lab-related IT reports
2006	320	28
2007	121	25
2008	200	44
2009	230	61
2010	205	56
2011	217	74
Total	**1293**	**288**

288/1293 (22%) laboratory errors are IT-related and 185/288 (64%) caused by human intervention


Number of reports
70
60
50
40
30
20
10
0
Failure to identify/consult historical records
Warning flag ignored or erroneously overridden
Failure to utilise or update warning flags/logic rules
Inappropriate release of components by electronic issue
IT laboratory-related error type

Consequence of warning flag failure

Requirement not met:	TOTAL
Correct ABO/RhD group for HSCT patients	30
Irradiated	26
Antigen negative	20
CMV negative	12
Appropriate Electronic Issue	7
MB-FFP	3

Case 1

- Irradiated blood was requested for a patient and written onto the request form but this was missed by the laboratory assistant (MLA) booking in the request.

- At the time, request forms were not allowed on the crossmatch bench so the biomedical scientist (BMS) was unaware of the need for irradiated blood and issued non irradiated blood to the patient.

Transfusion request form

BLOOD TRANSFUSION

Send request form with sample to lab in a plain sample bag. Retain remainder of document with patient documents.

LAB USE ONLY

SAMPLE BARCODE

SAMPLE TAKEN BY (PRINT)		BLEEP/ PHONE	

HOSPITAL No. Include Prefix:		NHS NUMBER	
SURNAME		CONSULTANT	
FIRST NAME		WARD	
DATE OF BIRTH		M	F

AFFIX ADDRESSOGRAPH

Previous transfusion		Previous reaction		Previous pregnancy		Known antibodies		Recent anti-D	

INDICATION CODE (see page 6) (not required for G&S or paediatric requests)		CLINICAL DETAILS/REASON FOR REQUEST

Document Consent	Consent given pre-transfusion	Prior consent not possible - Info given retrospectively	Not possible: reason stated in medical notes
Sign/date			

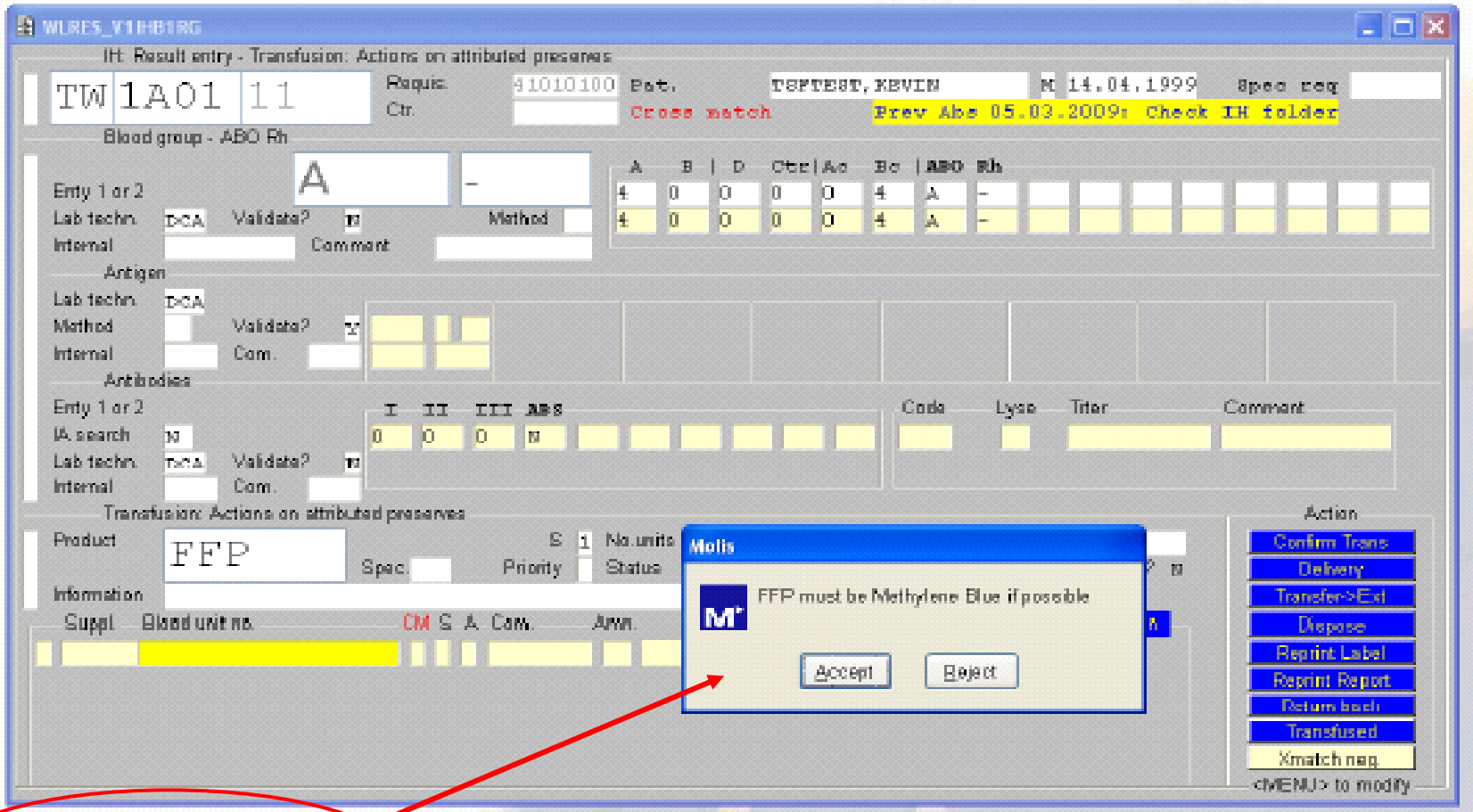
PRODUCT	QTY	Requesting Practitioner (PRINT)	
GROUP & SAVE ONLY		Designation	
RED CELLS		Signature	
FRESH FROZEN PLASMA (adult dose 4 units)		Bleep/phone	
PLATELETS		Date of request	
CRYOPRECIPITATE (adult dose 2 units)		Date & Time required	
Special requirements YES / NO IRRADIATED / CMV NEGATIVE			

Patient's special requirements may be indicated on the Crossmatch Request form but missed by the laboratory.

Case 2

- A previously unknown oncology patient grouped as an O RhD positive but with no anti-B.
- This group was manually entered on to the laboratory information management system (LIMS) as group B but the result was not authorised.
- Blood was then reserved for the crossmatch prior to the grouping results being authorised.
- The crossmatch was serologically compatible and the blood was issued.
- The BMS issuing the blood **overrode the IT alert** which indicated that the group had not yet been authorised.
- The patient received 80mL of ABO-incompatible red cells before the error was noticed and the transfusion was stopped. There was no transfusion reaction.

Transfusion Laboratory Information Management System (LIMS)



Case 3

- A post-partum transfusion was administered to a patient who had transferred from another hospital.
- The LIMS had no record of the patient's requirements on the current sample, so no alerts were generated.
- It was subsequently noted that the patient had sickle cell disease and had historical transfusion records.
- These had not been linked to the current record because the patient's name had changed.

Conclusion

- All manual interventions are prone to human error
- IT provides an added level of security if integrated properly into a robust process
- SHOT recommendations include a continuing need for appropriate serological knowledge and understanding by transfusion laboratory staff to underpin the safety provided by automation and IT.

Acknowledgements

- SHOT Team in Manchester
- SHOT Steering Group
- SHOT Working Expert Group
- NHS organisations in the UK for reporting
- Dave Cain – North Cheshire NHS Trust
- Sharran Grey – Bolton NHS Foundation Trust

SHOT Symposium 2013

Wednesday 10th July

Royal Society of Medicine, London, UK

To register your interest please contact the SHOT Office

+44 (0)161 423 4208

shot@nhsbt.nhs.uk

Further information is available at **www.shotuk.org**