SEC - RTC

Hema Mistry
Laboratory Incidents Specialist

Haemovigilance definition

Blood is a living transplant

Collection, transport, processing and testing
Delivery to the patient

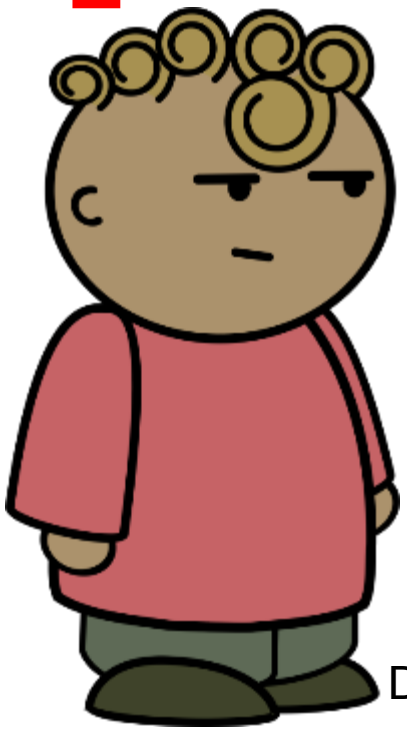
Is the donor safe?

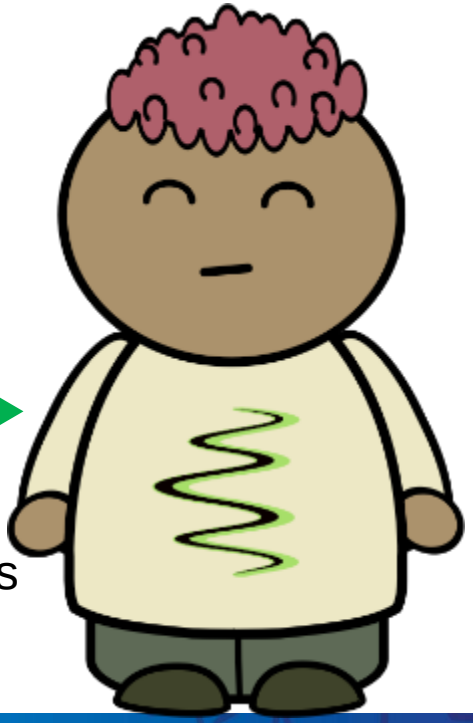
Is the process safe?

Is a transfusion the most appropriate treatment?

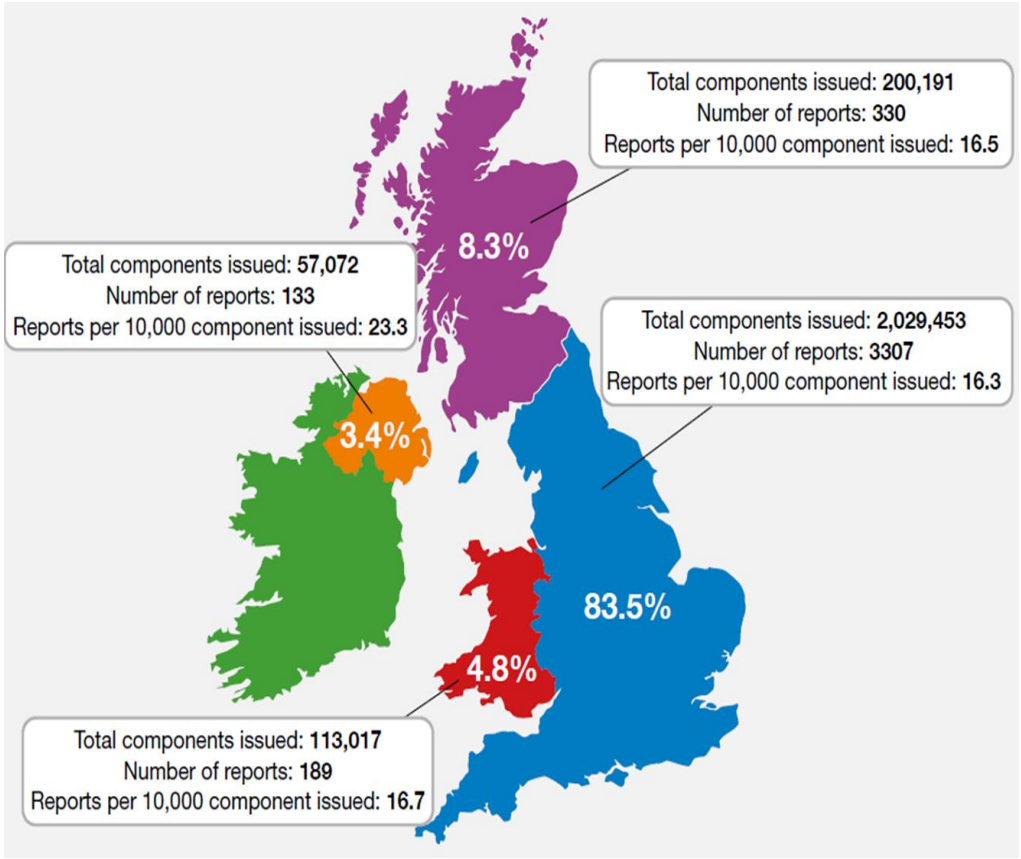
Recipient characteristics

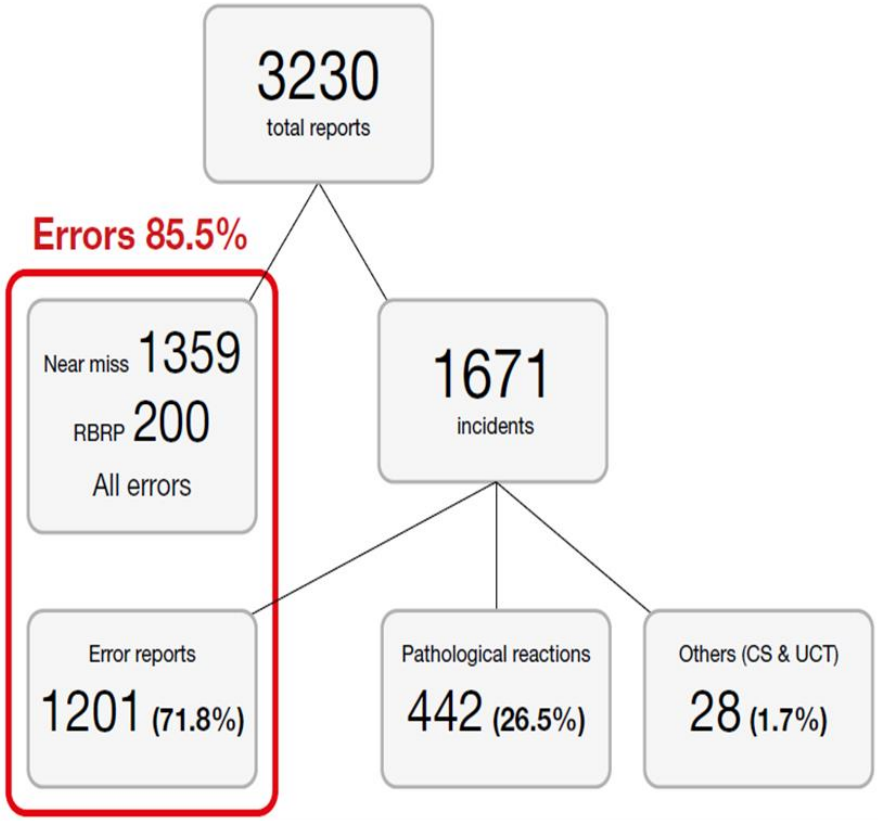
Donor characteristics





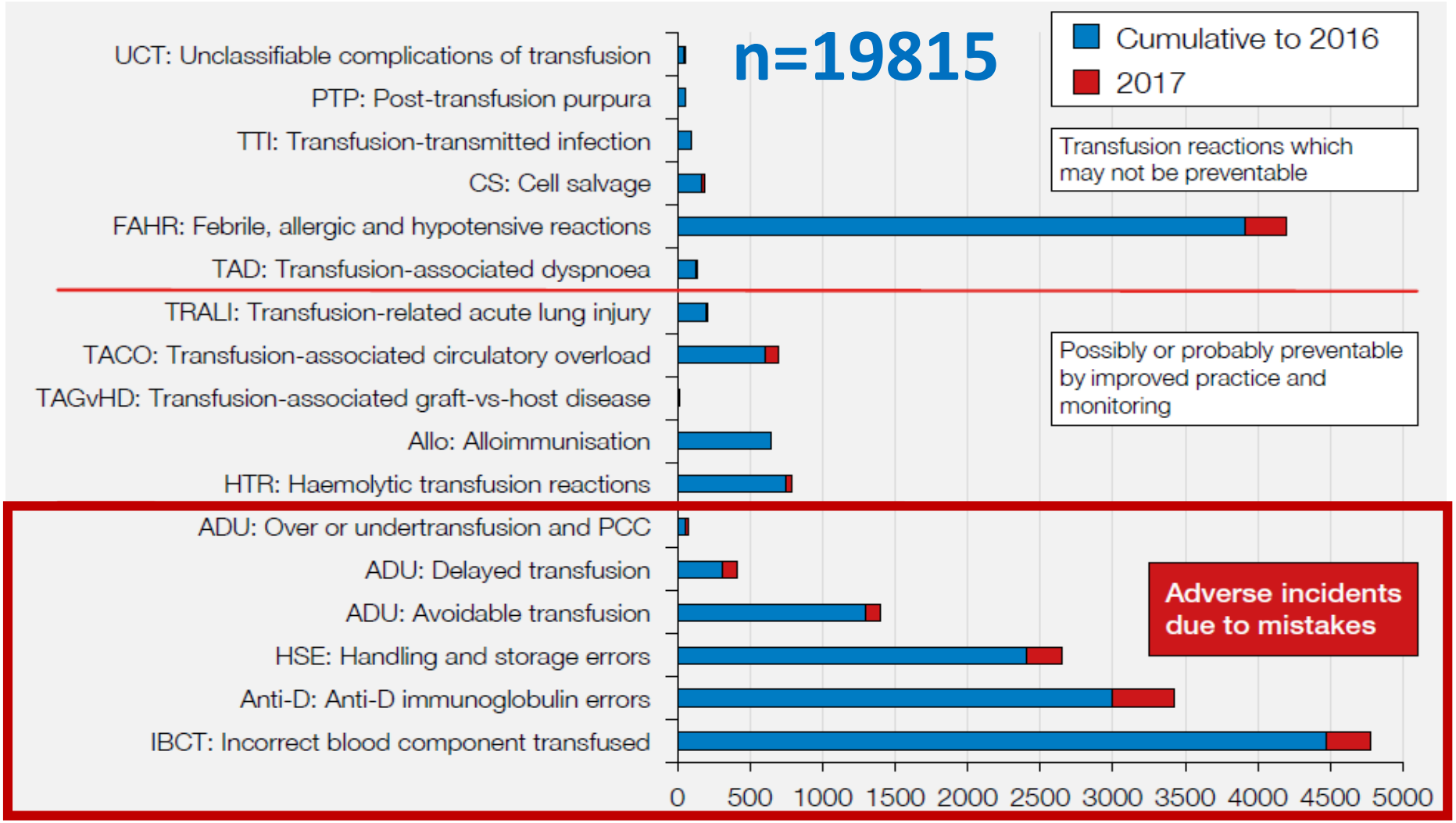
Reports in 2017 n=3230



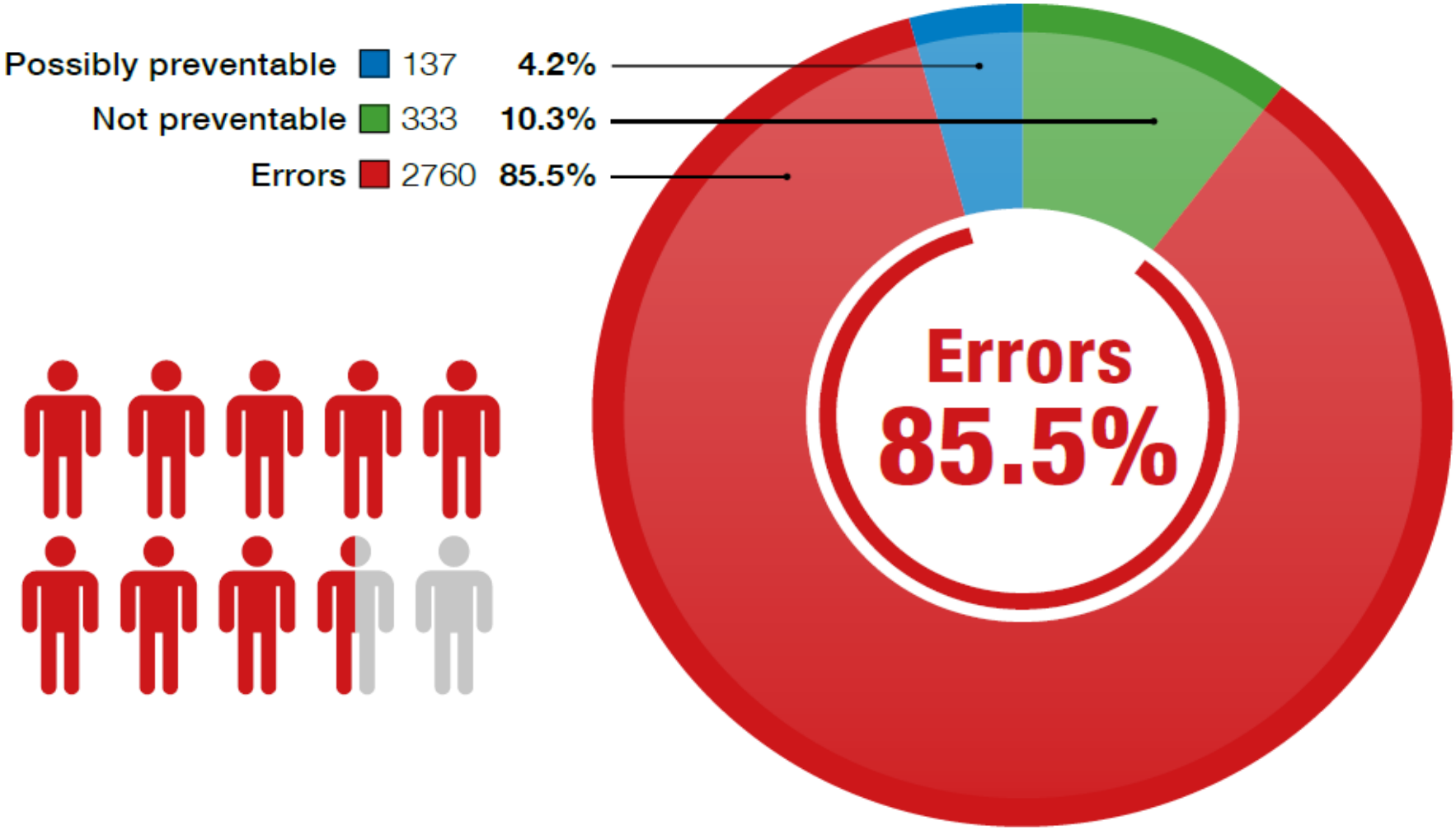


RBRP=right blood right patient; CS=cell salvage; UCT=unclassifiable complications of transfusion

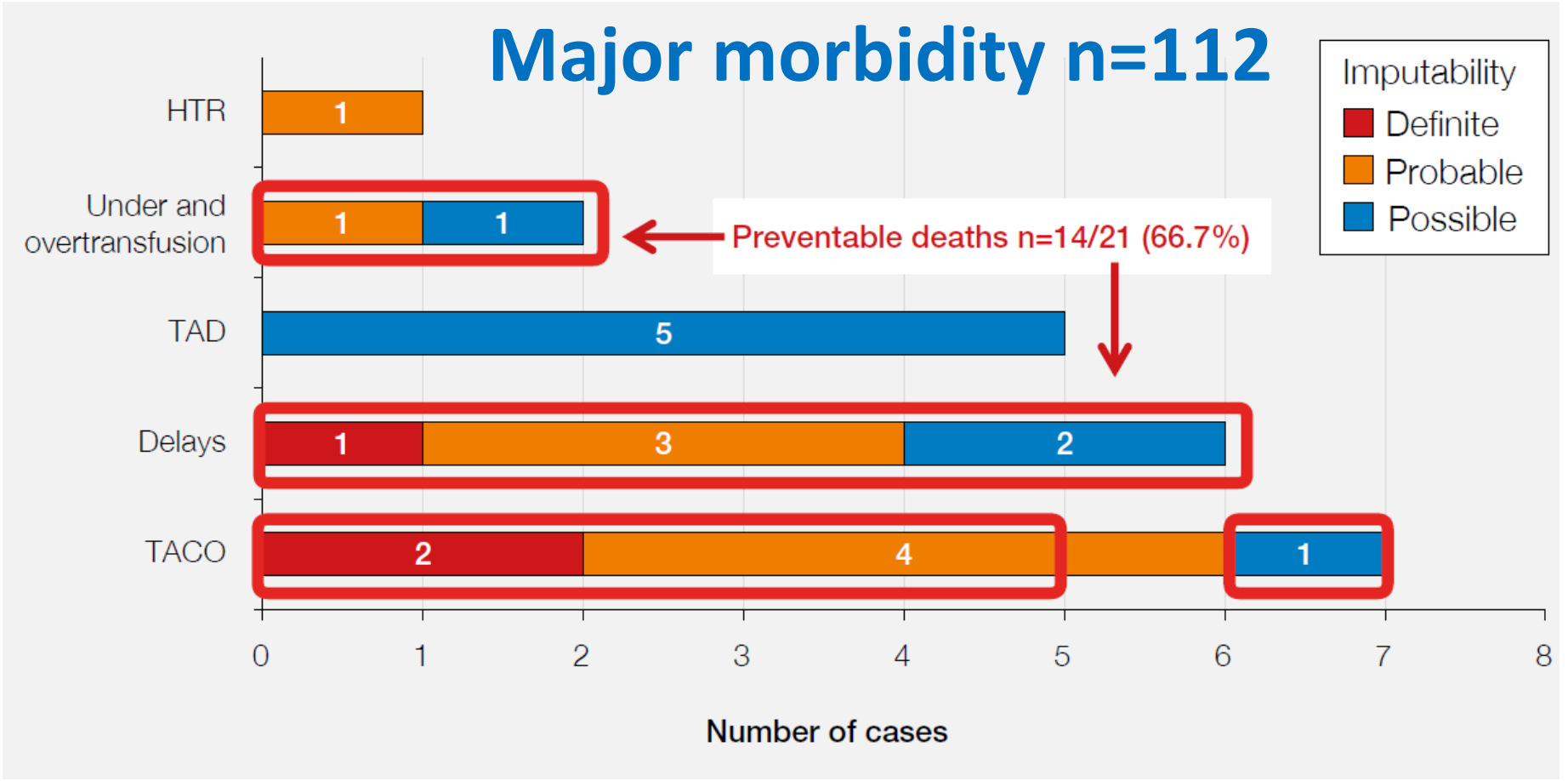
Cumulative data for all SHOT categories 1996 to 2017



Errors account for the majority of SHOT reports in 2017:

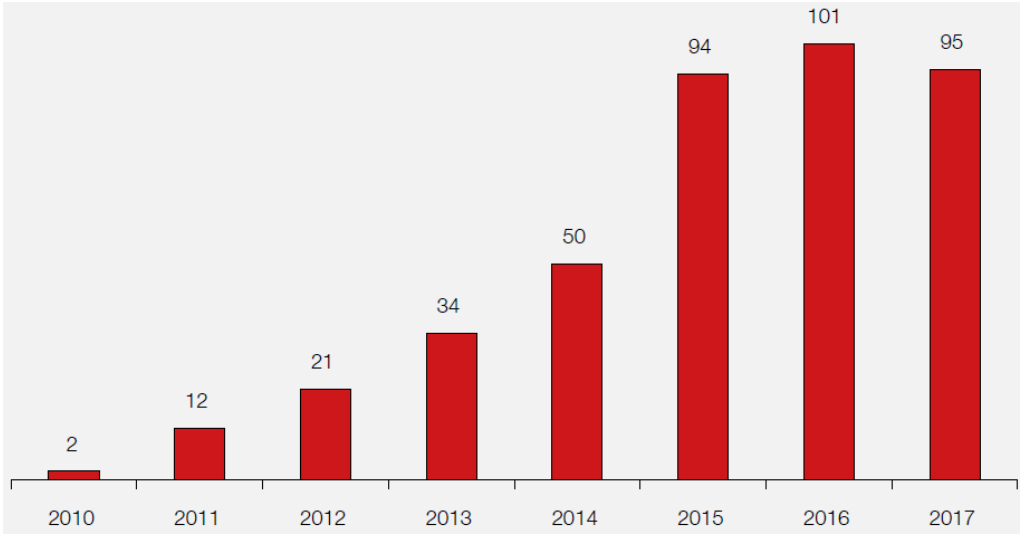


Deaths related to transfusion in 2017 n=21

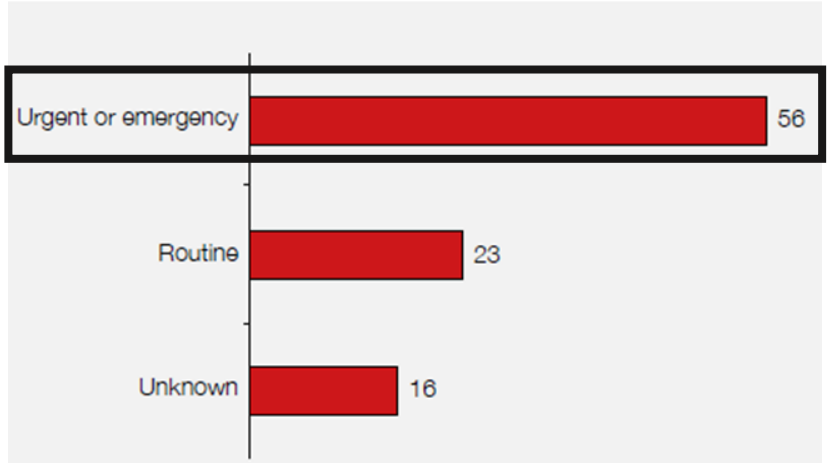


HTR - haemolytic transfusion reaction; TAD – transfusion associated dyspnoea; TACO – Transfusion associated circulatory overload

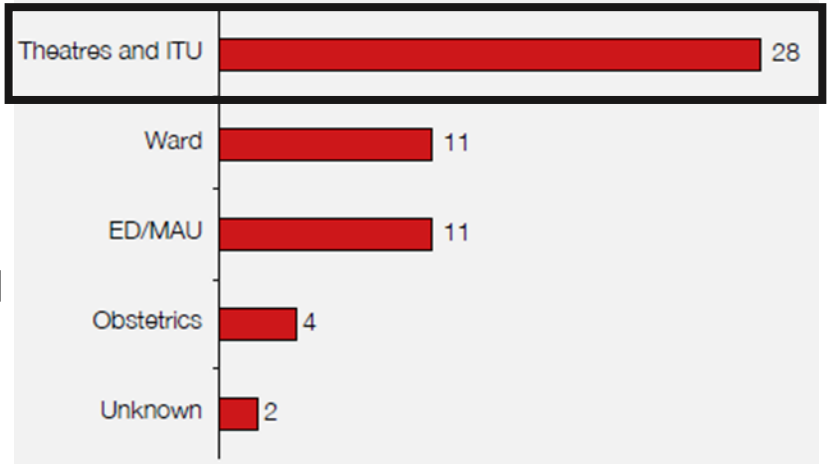
Delayed transfusion reports by year 2010-2017



Urgency of delayed transfusion n=95

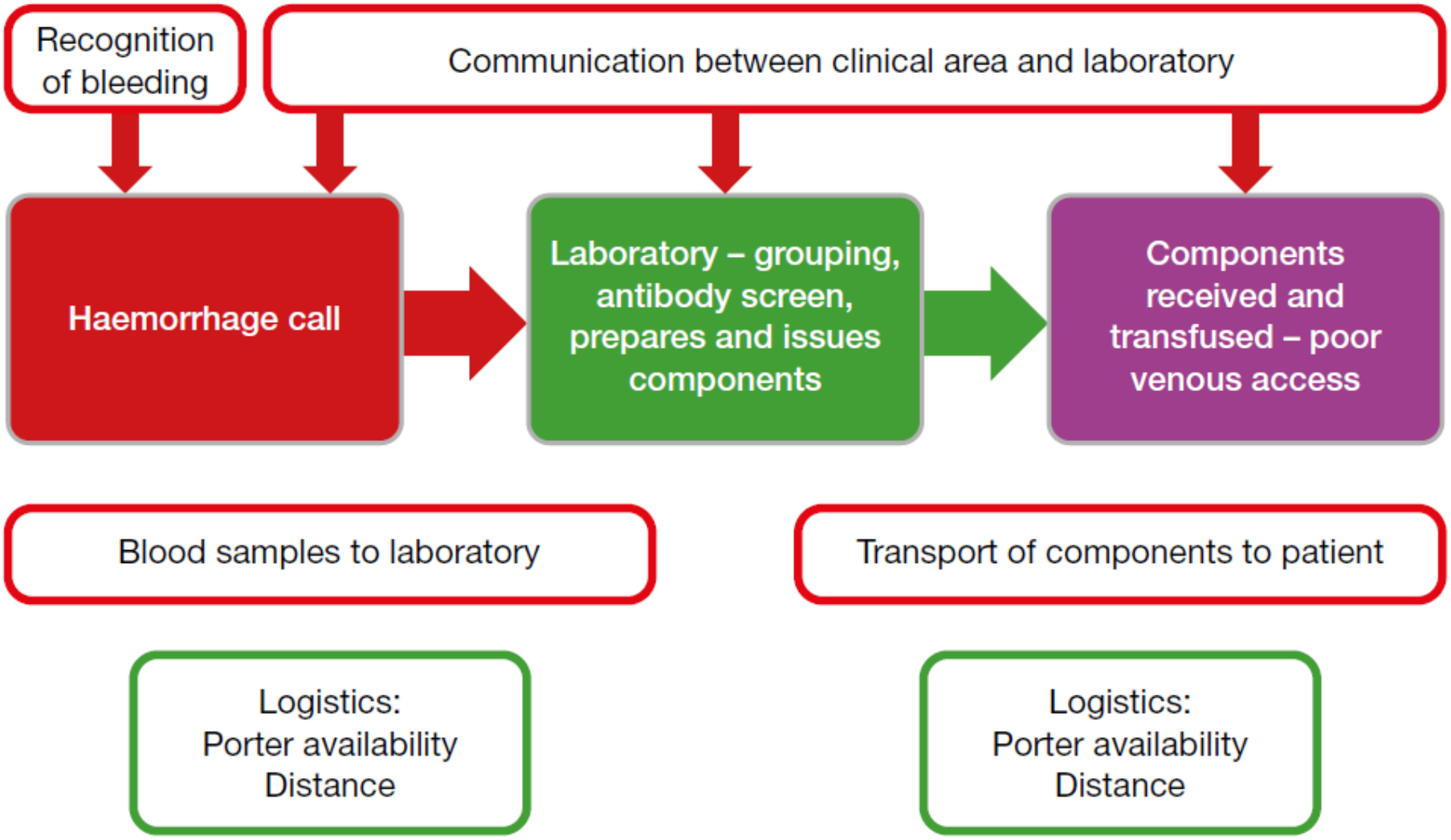


Location of emergency and Urgent transfusions n=56

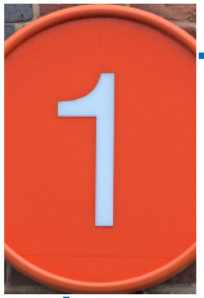


ED – emergency department; MAU – medical admissions units;
ITU – intensive therapy unit (all types)

Potential hold-up points in the transfusion pathway



Recommendations



Training in ABO and D blood group principles is essential for all laboratory and clinical staff with any responsibility for the transfusion process. This should form part of the competency assessments

All available information technology (IT) systems 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

A formal pre-transfusion risk assessment for transfusion-associated circulatory overload (TACO) should be undertaken whenever possible, as TACO is the most commonly reported cause of transfusion-related mortality and major morbidity

Background

British Society for Haematology
Listening • Learning • Leading

UKTLC

TRANSFUSION MEDICINE Official Journal of the British Blood Transfusion Society
Transfusion Medicine | GUIDELINES

Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories*

British Committee for Standards in Haematology
C. Milkins,[1] J. Berryman,[2] C. Cantwell,[3] C. Elliott,[4] R. Haggas,[5] J. Jones,[6] M. Rowley,[3,7] M. Williams[8] & N. Win[9]

[1]UK NEQAS (BTLP), West Herts Hospitals NHS Trust, Watford, UK, [2]Department of Blood Transfusion, University College London Hospitals, NHS Foundation Trust, London, UK, [3]Department of Blood Transfusion, Imperial College Healthcare NHS Trust, London, UK, [4]Department of Blood Transfusion, South Tees Healthcare Trust, Middlesborough, UK, [5]Department of Blood Transfusion, Leeds teaching Hospital NHS Trust, Leeds, UK, [6]Welsh Blood Service, Cardiff, UK, [7]Colindale Centre, NHSBT, London, UK, [8]Leeds Centre, NHSBT, Leeds, UK, and [9]Tooting Centre, NHSBT, Tooting, UK

Received 18 July 2012; accepted for publication 27 September 2012

TRANSFUSION MEDICINE Official Journal of the British Blood Transfusion Society
Transfusion Medicine | GUIDELINES

UK Transfusion Laboratory Collaborative: minimum standards for staff qualifications, training, competency and the use of information technology in hospital transfusion laboratories 2014

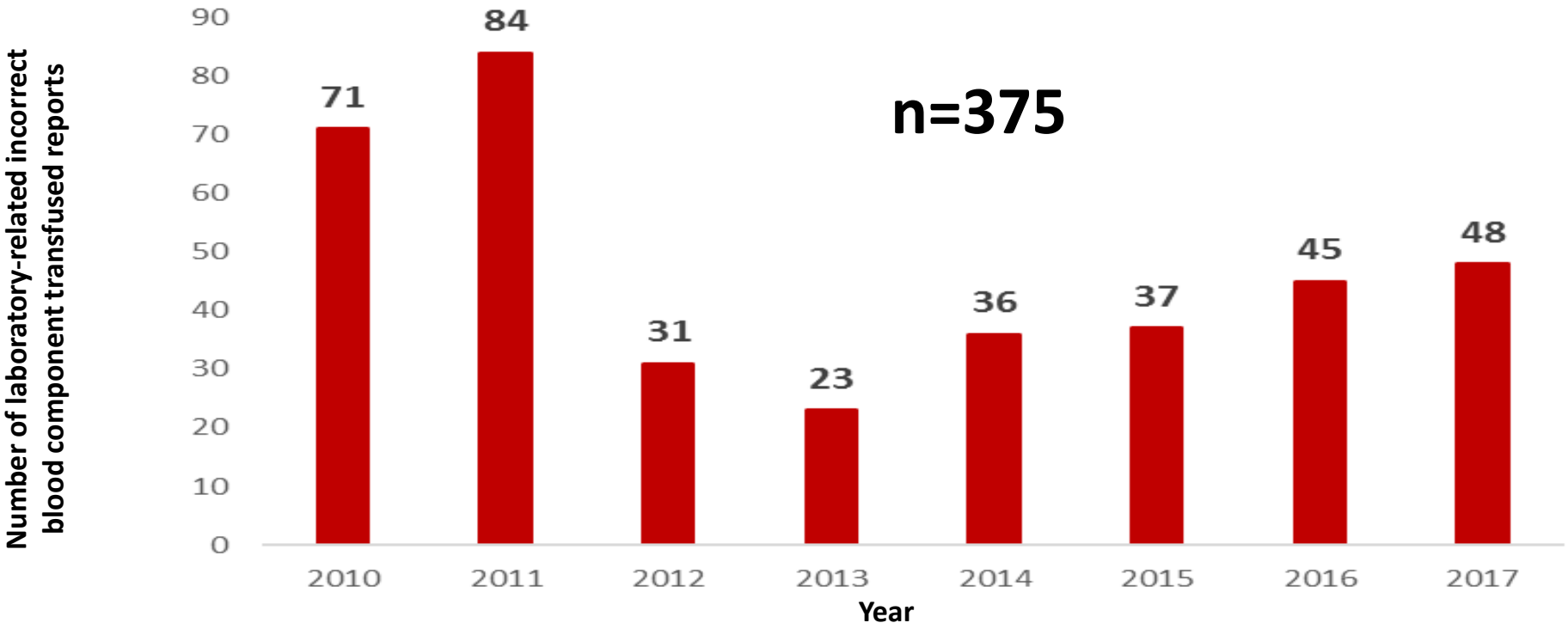
B. Chaffe,[1] H. Glencross,[2] J. Jones,[3] J. Staves,[4] A. Capps-Jenner,[5] H. Mistry,[6] P. Bolton-Maggs,[6] M. McQuade[7] & D. Asher[8]

[1]West Herts Hospitals NHS Trust, UK NEQAS BTLP, Watford, UK, [2]Portsmouth Hospitals NHS Trust, Cytology, Portsmouth, UK, [3]Welsh Blood Service, Quality Assurance, Cardiff, UK, [4]Oxford University Hospitals NHS Trust, Blood Transfusion, Oxford, UK, [5]TDL Pathology, Blood Transfusion, London, UK, [6]NHSBT Manchester Blood Centre, Serious Hazards of Transfusion (SHOT) Office, Manchester, UK, [7]Sottish National Blood Transfusion Service, Clinical Services Laboratory, Glasgow, UK, and [8]Norfolk and Norwich University Hospitals NHS Foundation Trust, Blood Transfusion, Norwich, UK

Received 28 April 2014; accepted for publication 19 August 2014

Method

- Review of laboratory-related incidents from January 2010 to December 2017 to determine whether laboratory staff had up-to-date competency assessments or not



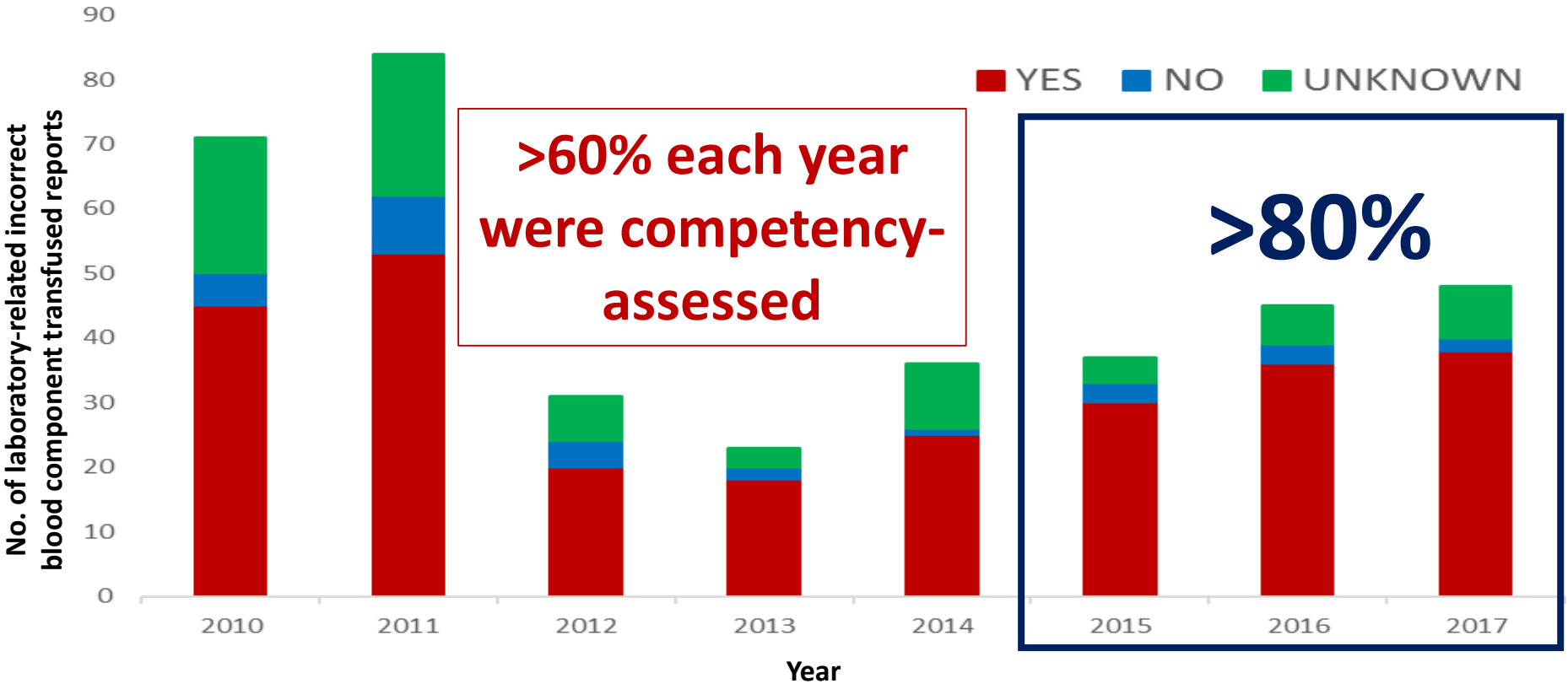
British Society for Haematology
Listening • Learning • Leading

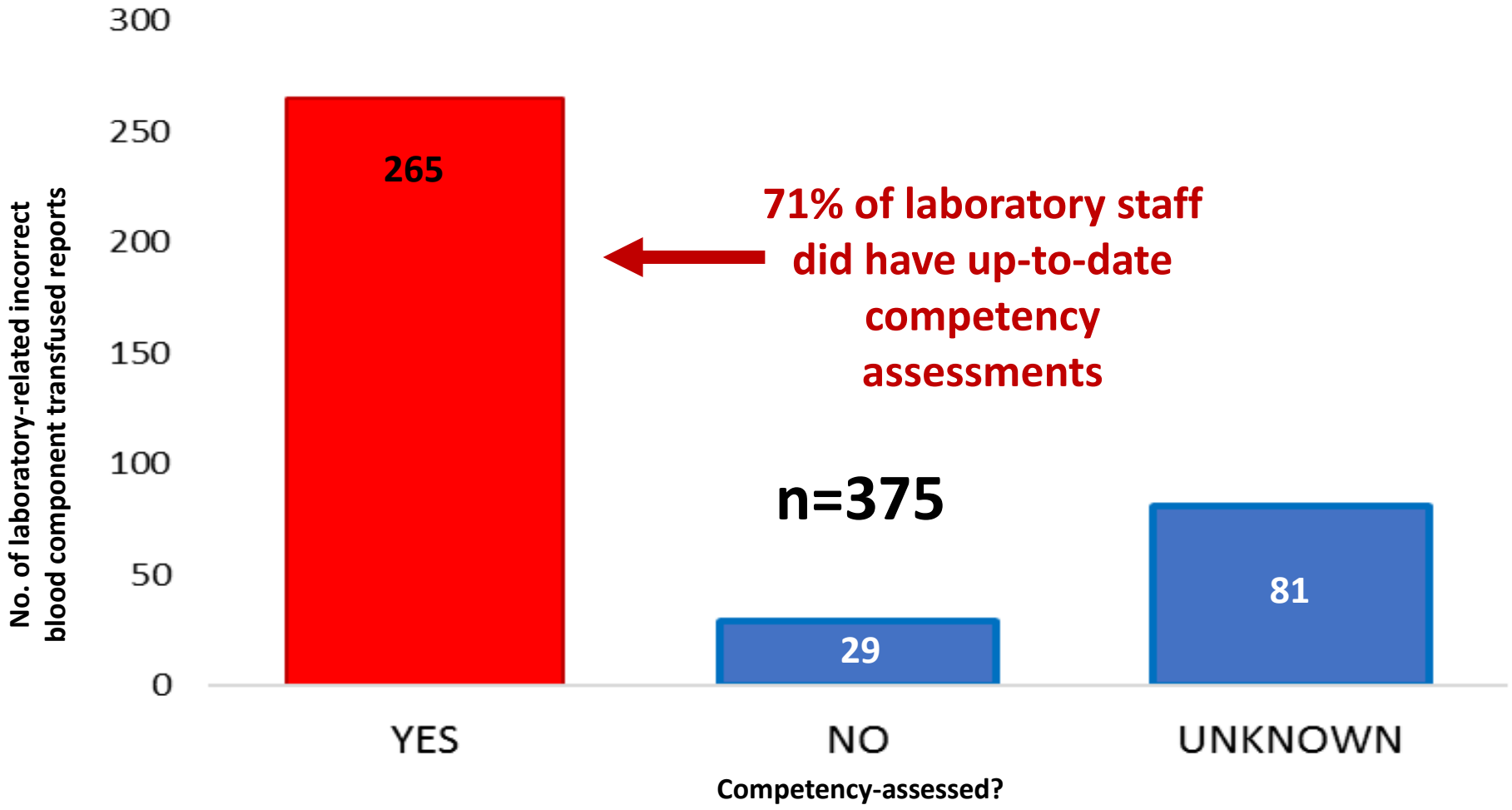
"There must be a documented programme for training laboratory staff, including on-call staff not routinely working in the laboratory, which covers all tasks and testing performed appropriate to the grade of staff and which fulfils the documented requirements of the laboratory"

UKTLC

"…locally defined annual programme of practical and knowledge-based competency assessment. All members of staff working at any time within a blood transfusion laboratory must actively and regularly participate in the programme. …..must cover appropriate scientific, methodological, scenario and case-based activities."

Competency assessed or not?




300
250
200
150
100
50
0
No. of laboratory-related incorrect blood component transfused reports
265
29
81
71% of laboratory staff did have up-to-date competency assessments
n=375
YES
NO
UNKNOWN
Competency-assessed?

Transfusion process is very complex

1 REQUEST

↓

2* SAMPLE

↓

3 SAMPLE RECEIPT

↓

4 TESTING

↓

5 COMPONENT SELECTION

↓

6 LABELLING

↓

7 COLLECTION

↓

8 PRESCRIPTION

↓

9* ADMINISTRATION

Midwife

Phlebotomist

Lab Admin

Trainee

Scientist

Med Lab Asst

Porter

Doctor

Nurse

** Critical points where positive patient identification is essential*

ABO-incompatible red cell transfusions

12 ABO-incompatible transfusions

10/12 staff were competency-assessed

Errors occurred during the following steps

Sample receipt and registration (1)

Testing (5)

Component selection (4)

Major morbidity – selection error

Case

A man in his 20's in sickle cell crisis required transfusion of 3 units of red cells. The patient was known to be group O D-positive with no alloantibodies

Selection error

The biomedical scientist selected three group B D-negative red cell units in error and proceeded to issue these electronically via the laboratory information managements system

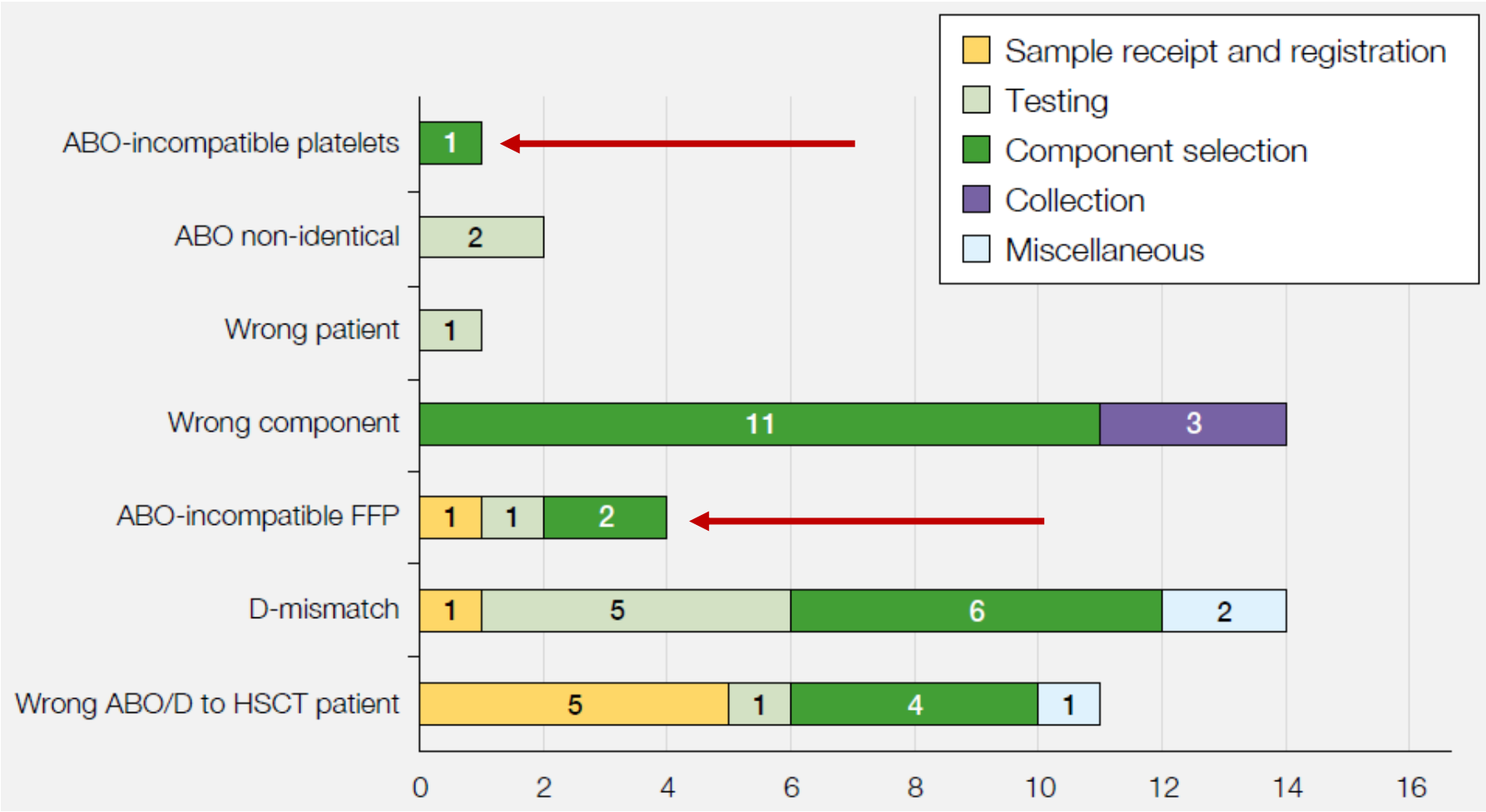
Alert

Warnings stating the ABO discrepancy were displayed, but were overridden by the scientist by pressing a function key, because there was no requirement to enter text such as 'yes proceed'

Case continued…

- During transfusion of the first unit, the patient felt unwell and transfusion was stopped
- The unit was returned to the laboratory but rather than initiating an investigation, the unit was placed in quarantine until the day staff came on duty when the ABO discrepancy was noticed
- Overnight, 2 further ABO-incompatible units were transfused to the patient

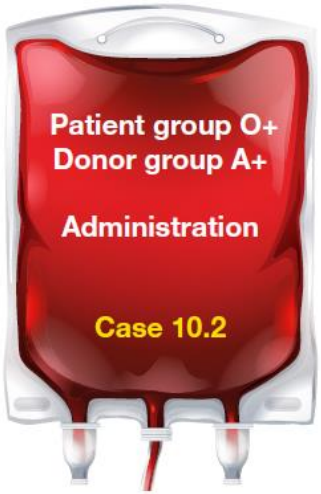
Laboratory errors resulting in wrong component transfused n=47



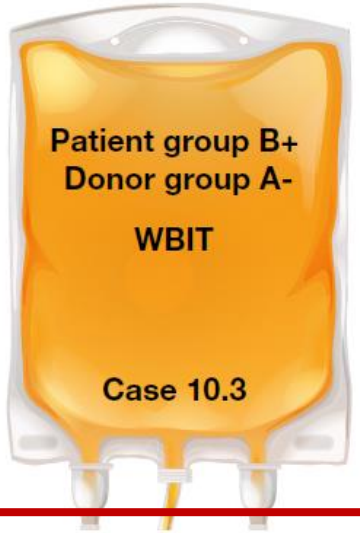
Transfusion of ABO-incompatible components 2017

ABO-incompatibility should be detected at the bedside check

Red cells n=1

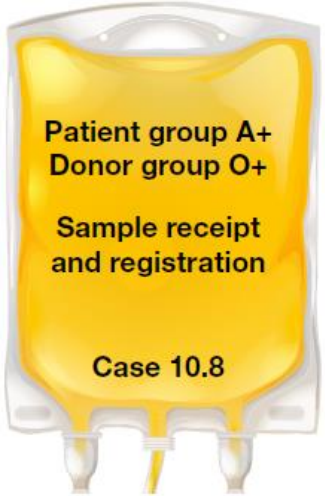


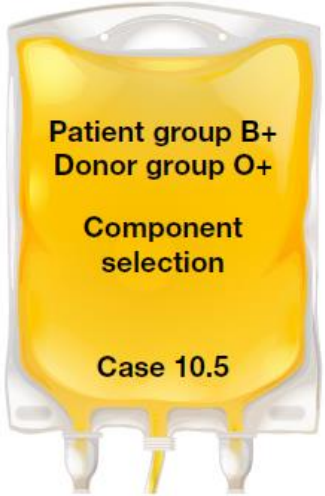
Platelets n=2



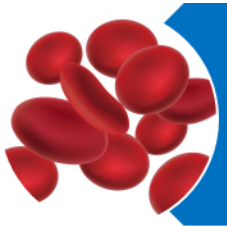
(Unintentional)

FFP n=4





Incompatible FFP – component selection



Patient received multiple transfusions of red cells, FFP and platelets for recurring GI bleeding in the presence of liver disease. The patient had been grouped as O due to the presence of donor red cells in the test samples (actual group B).

Several messages had been hand written on a single sticky note by a junior

Group O FFP is ONLY SUITABLE for Group O patients

The universal FFP group is AB

release had been approved.

The LIMS allowed major ABO mismatched for plasma components although it did display a warning flag that was overridden. The laboratory staff did not seek formal confirmation before handing the FFP to a porter. The patient was transfused the incompatible FFP. There was no reported clinical adverse outcome.

Incompatible FFP – sample receipt and registration

Five units of FFP were ordered by telephone for Patient 1. During the laboratory IT process, the copy and paste function was used to populate the sample identification r
pasted into the sample ID field belonged to the previous patient (Patient 2)

Error 1 – sample receipt and registration

Error 2 – component selection

At collection, the porter noted the discrep
the person he was sent to collect for and th
him by the BMS

Error 3 – component labelling

Error 4 – collection

The FFP was then re-labelled for Patient 2, but the BMS failed to note that the FFP was incompatible. The nurse administer
was different to the patient but believed that group O components were compatible for all patients. This resulted in group O (Patient 2) FFP being administered to Patient 1 (group A).

Error 5 – administration

Information Technology

IT systems support transfusion practice but do not replace knowledge of safe practice

No longer possible to operate a transfusion laboratory without a LIMS

UKTLC

'It is expected that 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' (Chaffe et al. 2014)

NICE
National Institute for Health and Care Excellence

Implementation of electronic patient identification systems to improve the safety and efficiency of routine transfusion practice will cost money but bring substantial savings in nursing and laboratory staff time and reduced red blood cell unit wastage

Human factors is defined as :

"Anything that affects an individual's performance"

(HEE 2018)

Health Education England

Support the delivery of excellent healthcare and health improvement to the patients and public of England by ensuring that the workforce of today and tomorrow has the right numbers, skills, values and behaviours, at the right time and in the right place.

Recommendations (HEE) (relevant to SHOT reporting)

01

To ensure learning from patient safety data and good practice

05

Supporting the ‘duty of candour’

11

Principles of human factors and professionalism must be embedded across education and training

Poor communication

Knowledge gaps

Distractions/ Interruptions

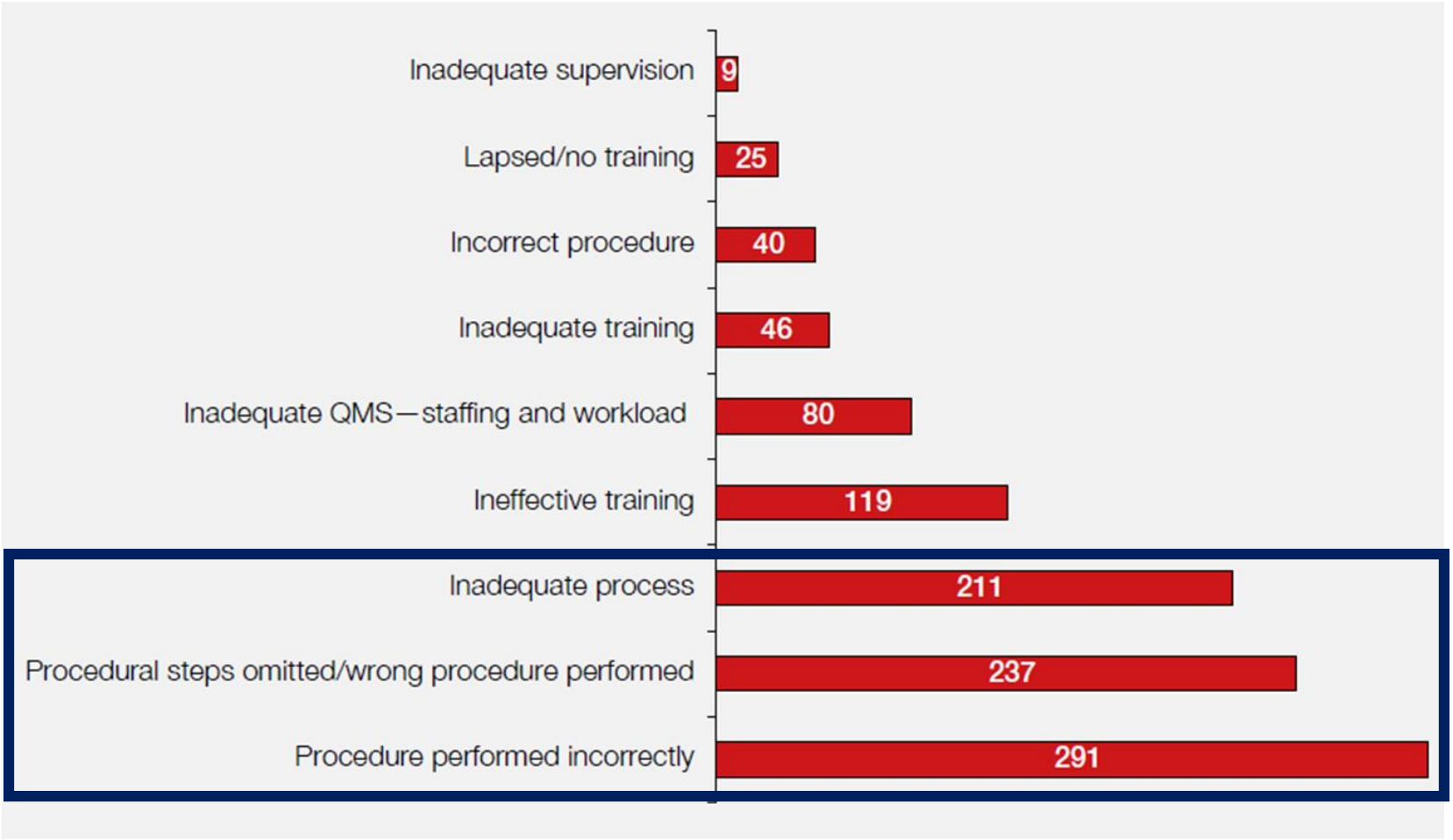
Common errors

Assumptions

Deviations

Communication Matters

EU reporting 2017 – human errors



QMS=quality management system

Conclusions

Laboratory staff make errors despite having up-to-date competency assessments

Competency assessment is a snapshot moment. This may not reflect the real-life laboratory pressurised situation

Human factors training should cover all elements that could affect critical decision-making when working under pressure with constant interruptions

What else did we learn in 2017?

Do not assume, verify

Human Factors

What went wrong

Staffing

Do not delay

Guidelines or rules?

TACO alert

It is the clinicians responsibility

Acknowledgements

- Peter Baker – SHOT Working expert group
- Rashmi Rook – UKTLC Chair and SHOT Steering group
- Chris Robbie - MHRA
- Paula HB Bolton-Maggs – former SHOT Medical Director