Highlights of the 2013 SHOT Report

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NHSBT / SHOT

What is SHOT?

- Serious Hazards of Transfusion (Est 1996)
- Collect data on serious adverse reactions and events related to transfusion
- Data reviewed by transfusion experts to produce Annual SHOT Report
- Participation is professionally mandated
  - a requirement of quality, inspection and accreditation organisations
- Small core team based in Manchester

SHOT aims

- **IMPROVE** standards of transfusion practice by **EDUCATING** users on transfusion hazards and their prevention
- **AID** in the production of clinical guidelines for the use of blood components
- **INFORM** policy within transfusion services

Haemovigilance in the UK

MHRA

Medicines & Healthcare Products Regulatory Agency

- Competent Authority for the BSQR 2005
  - QMS in blood establishments and hospital blood banks.
- Competent Authority for the Medicines Act 1968
- Competent Authority for the Medical Devices Regulations 2008
- **STATUTORY** reporting

SHOT

Serious Hazards of Transfusion

- Confidential enquiry
- Serious adverse reactions/events AND near misses all of which occur in BOTH a laboratory and CLINICAL environment.
- **PROFESSIONALLY MANDATED** reporting

SHOT headlines 2013

- Participation includes 99.5% of NHS Trusts and Health Boards across the UK
- 2751 submitted reports were analysed
- 9 ABO incompatible red cell transfusions
- 22 deaths where the transfusion was causal or contributory
- 143 reports associated with major morbidity

Key Recommendation

All ABO incompatible transfusions to be included as ‘never events’

ABO incompatible transfusions may be fatal and are absolutely preventable. The two thirds that do not result in harm should be included as reportable events

Mortality/Morbidity data 2013

Acute transfusion reactions = leading cause of major morbidity

(*76 reports - (33 anaphylaxis, 22 severe febrile, 5 hypotensive, 6 severe mixed*)

Delayed transfusions = 5 deaths (*1 certain, 4 possible*) & 7 major morbidities (*3 cardiac arrests*)

Transfusion-associated circulatory overload (TACO) = 12 deaths (5 probable, 7 possible)

46/96 (47.9%) of TACO cases had serious outcomes

Key Recommendation

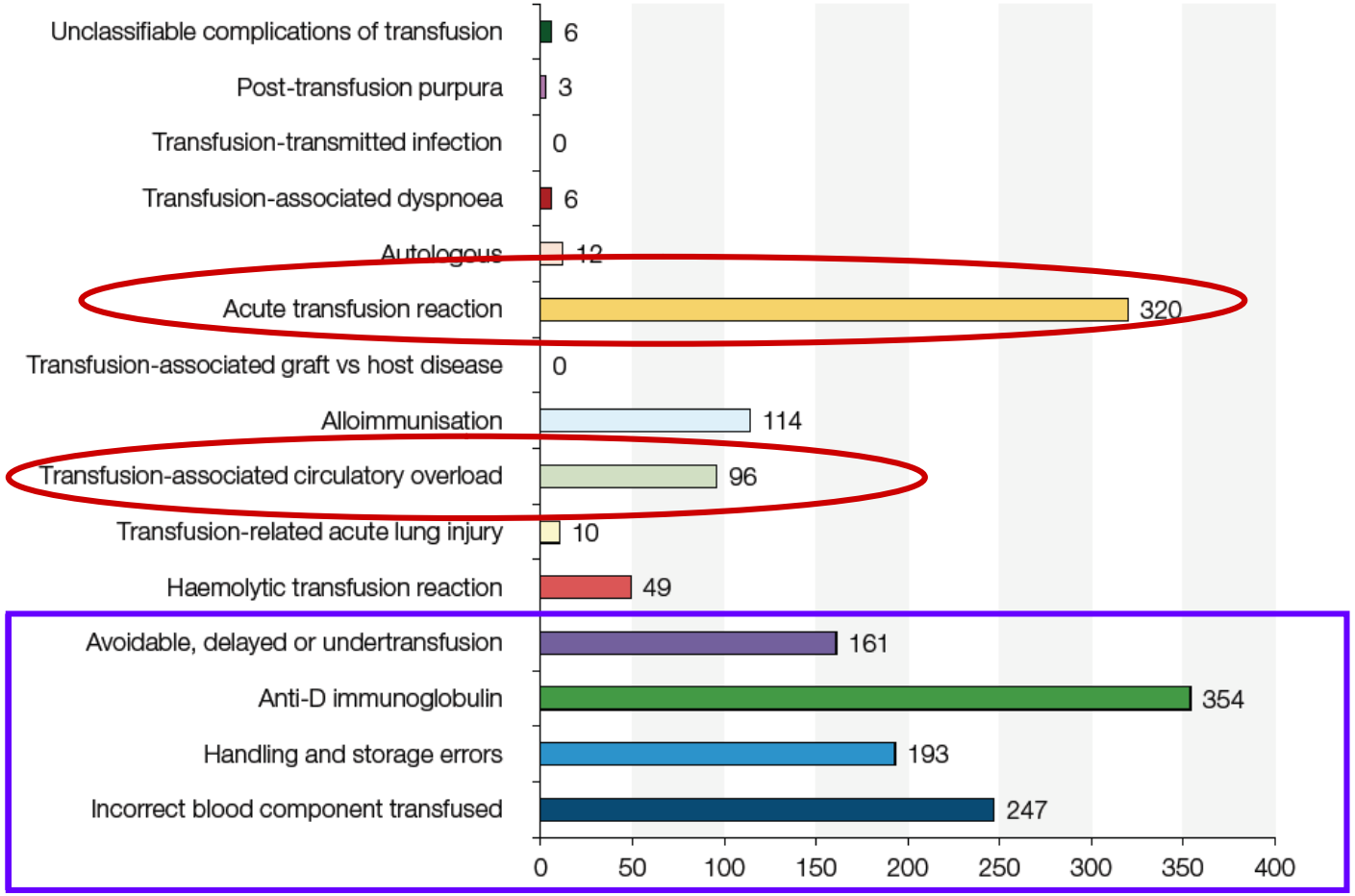
Don’t give two without review: Transfusion-associated circulatory overload (TACO) is a significant hazard, particularly when elderly or other patients at risk receive several units of blood without review and a check Hb level

***advice inspired by a campaign devised by NHSBT’s**

Patient Blood Management team

Reports analysed 2013 n=1571

*excluding near miss and right blood, right patient



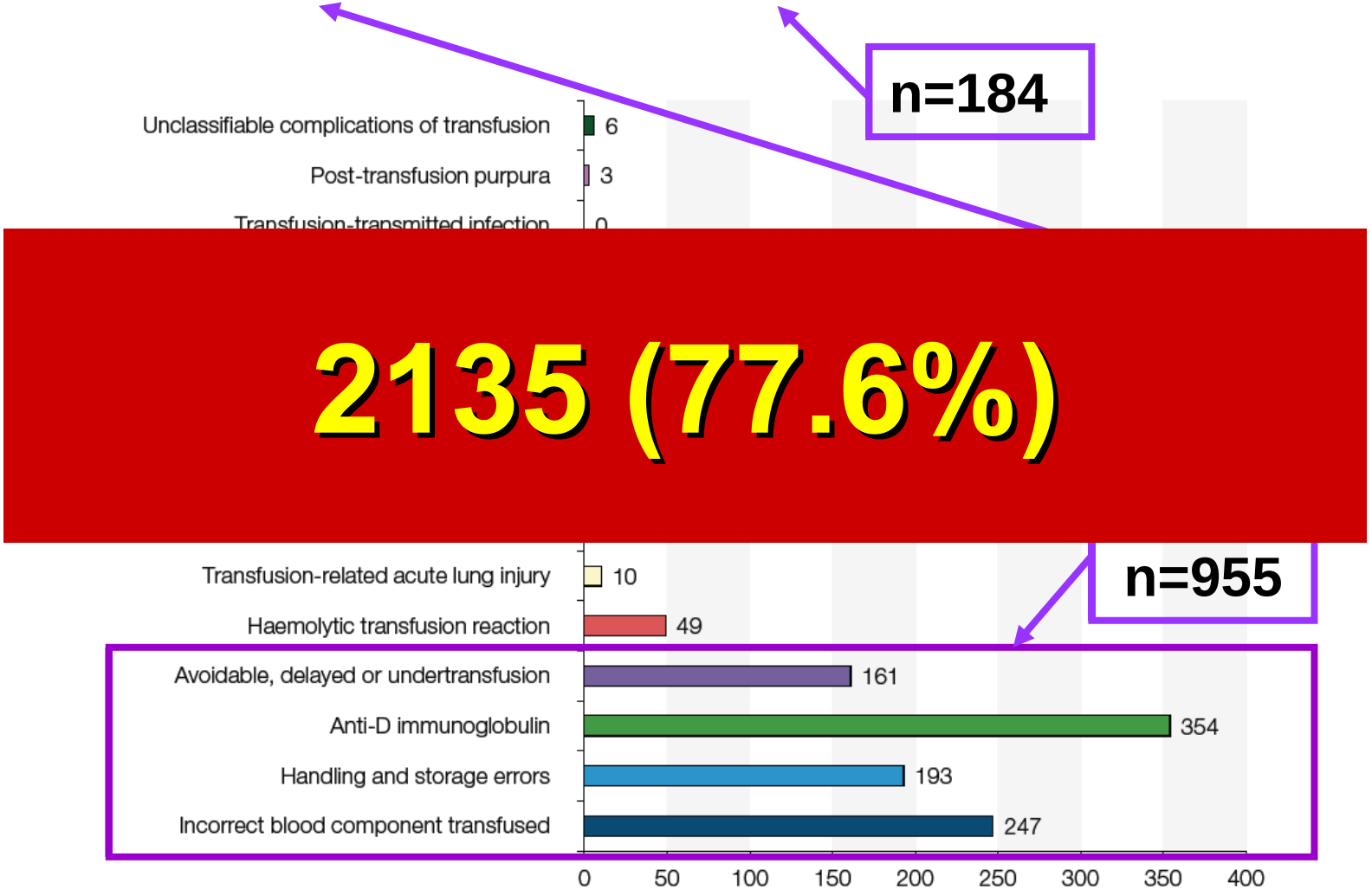
Blood Safety v Transfusion Safety

Transfusion transmitted infections	Risk of infected donation entering blood supply
HBV	1 in 1.3 million
HCV	1 in 28.6 million
HIV	1 in 7.1 million

SHOT REPORTS	Risk per component issued
Total risk of death	1 in 125,000
Total risk of major morbidity	1 in 19,157
Risk of ABO incompatible red cells	1 in 263,157
Risk of wrong component	1 in 48,309
Risk of specific requirements not met	1 in 14,514

Reports analysed 2013

(excluding near miss and right blood, right patient)



Specific Requirements Not Met (SRNM)

- Much more than just CMV- or Irradiated
  - Need to match antigen profile (for multi-transfused haemoglobinopathy patients who develop antibodies)
  - Irradiated for Haematological disorders and purine analogue drugs
  - Pathogen inactivated non-UK plasma for patients born on or after 1.1.96 (MeBlue FFP or Solvent Detergent FFP)
  - Kell (-) red cells for women of childbearing age
  - CMV(-) for ROUTINE transfusions in pregnancy
- Clinicians ordering blood components unaware of the requirements - maybe unaware even of possibility of additional specification
- Failure to inform lab / update computer record / transfer of care

Other Errors

- **WCT** – Wrong Component Transfused
  - Component given to wrong patient
  - Given wrong component (platelets instead of red cells)
  - Incompatible units given
- **HSE** – Handling & Storage Errors
  - Gave blood out of temperature control
  - Transfused for too long (>5 hours)
- **ADU**
  - Avoidable transfusion / avoidable use of O Neg
  - Delay in transfusion causing harm to the patient
  - Undertransfusion causing harm to the patient
- **RBRP** - Right Blood Right Patient
  - Component is correct for the patient, but ID or labelling errors

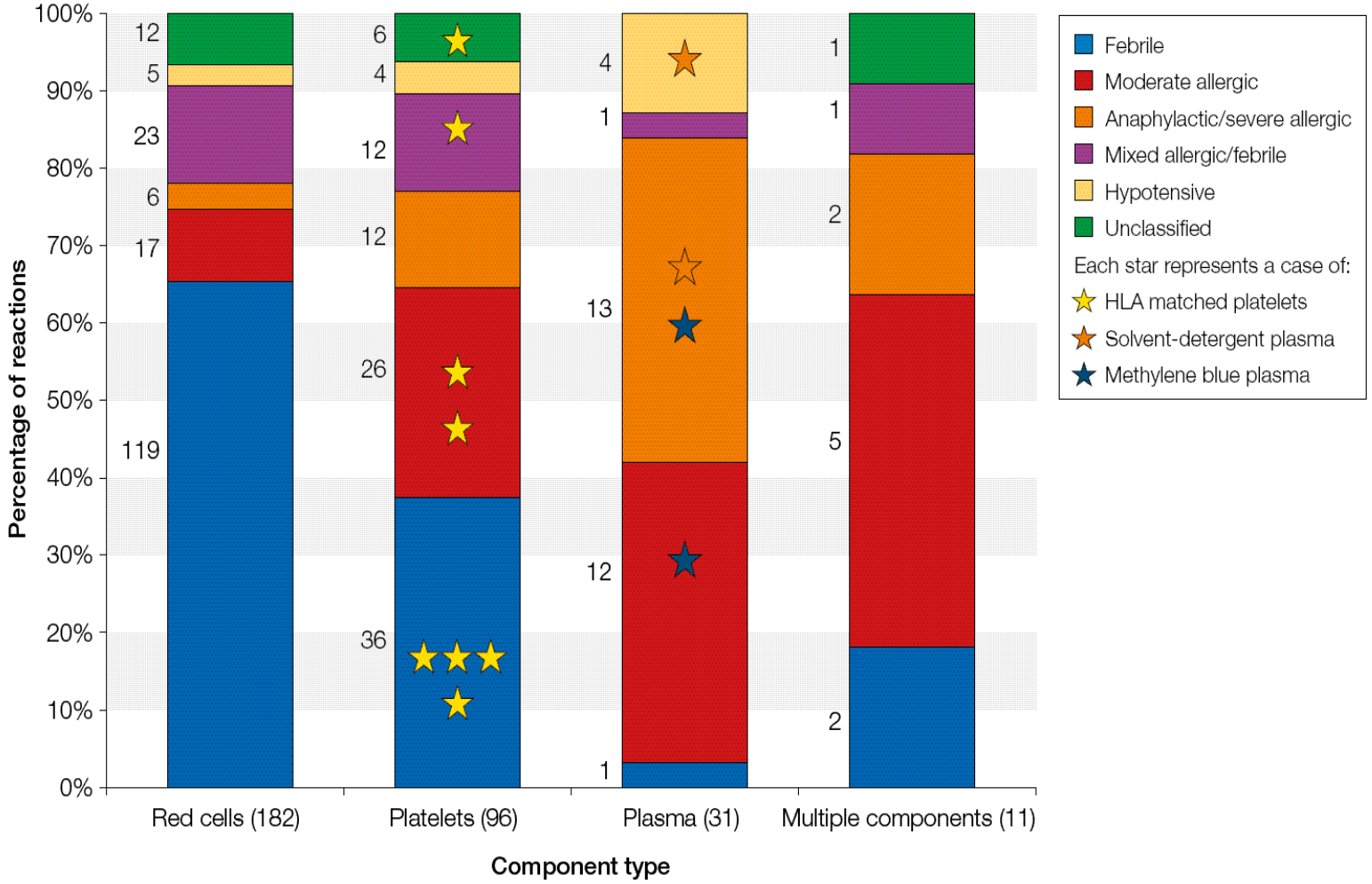
Physiological Reactions

- Transfusion reactions may have many overlapping symptoms and signs with varying severity
- Fever, chills, rigor, myalgia, nausea, urticaria, itching, swelling, respiratory symptoms.....etc.
- Advise patients to report any adverse events and seek advice if they feel unwell

Key Recommendation

Patients transfused as day cases or outpatients must be given printed advice and a 24 hour contact telephone number and warned to report any adverse symptoms or complications

ATR – reaction by component type 2013



Unrecognised DHTR at home

- An elderly woman with myelodysplastic syndrome received 2 units of red cells on the haematology day unit with no ill effect.
- Eight days later she experienced loin pain and passed black urine, which continued for 5 days.
- The primary care team prescribed antibiotics, but did not take a urine sample or report this to the haematologist.
- It was not until 3 weeks later, when the patient returned to the day unit for an appointment that a DHTR (due to anti-c) was diagnosed.

HDU admission in patient at increased risk of TACO after transfusion as a day case

- A 78 year old female with myeloma, weight 56 kg, was transfused 3 units of red cells as a day case despite being at increased risk of developing TACO (renal impairment, hypoalbuminaemia, age ≥70 years, low bodyweight).
- She developed fluid overload and pulmonary oedema with hypertension and hypoxia before the end of the third unit. She initially responded to diuretic and was sent home by a junior doctor, but was unable to lie flat all night because of shortness of breath.
- She was readmitted, to the HDU, within 24 hours with pulmonary oedema and an ST segment elevation myocardial infarction (STEMI).

Avoidable transfusion

- 75 yr old man visited at home by GP for unilateral swelling of the leg (Hb 124 g/L three weeks before)
- GP takes sample into syringe and walks 10 mins back to surgery to decant into sample tube
- Hb 76 g/L, so patient (no symptoms of anaemia) admitted overnight as an emergency by on call GP
- Repeat Hb and crossmatch sample at 0640, result available at 0700, Hb 114 g/L
- Transfusion started at 0955 without results review and stopped at 1120 (after 100 mL)

Acute transfusion reaction

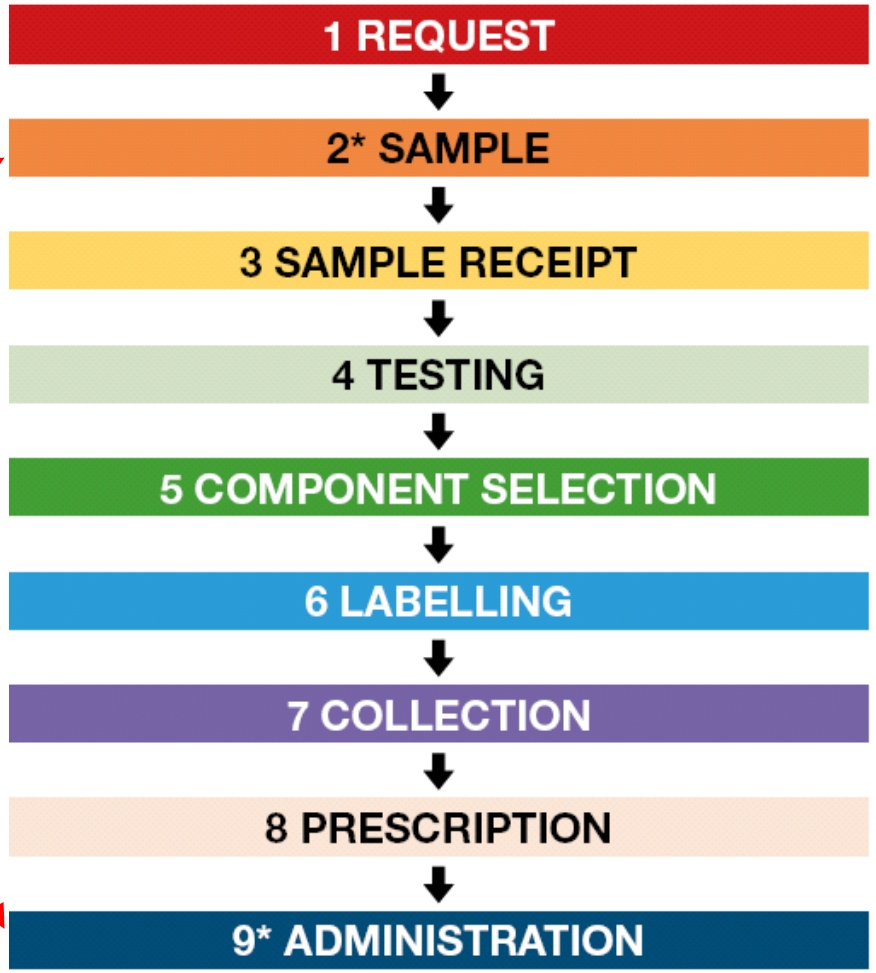
- One hour and 20 minutes into a transfusion of red blood cells, the patient developed a 2.2 degree rise in temperature, severe rigors, tachycardia, vomiting, chest pain and a decrease in oxygen saturation
- The rigors prevented measurement of the blood pressure
- The urine was positive for haemoglobin but the patient was known to have haematuria
- The implicated unit was negative on culture and laboratory tests were negative

Lack of component knowledge leads to the incorrect component type being transfused

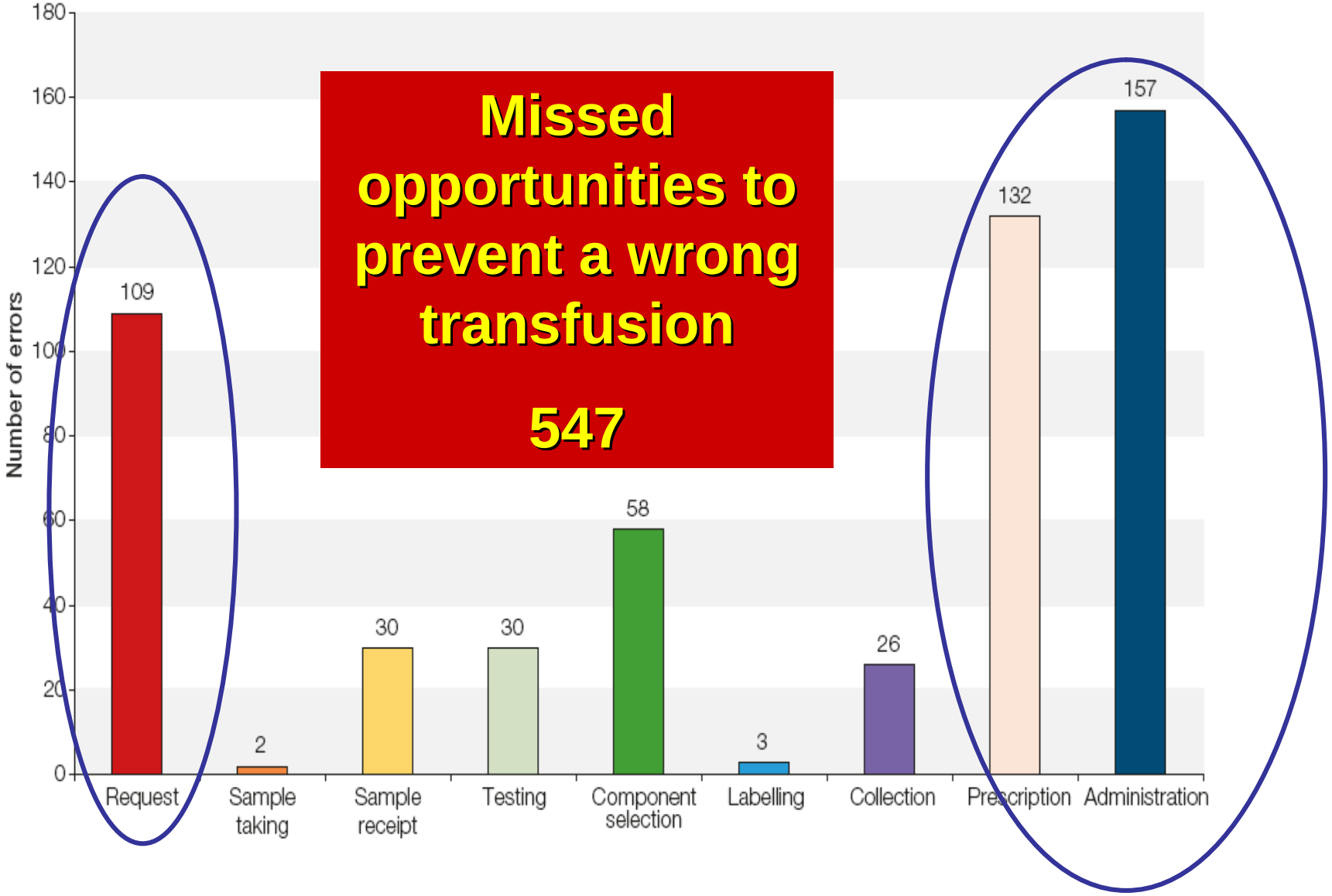
- The patient was prescribed two units of platelets before surgery. Red cells were also reserved because he had irregular red cell antibodies.
- The staff gave two units of red cells thinking that the 'optimal additive solution' meant that the bag contained platelets.
- They tried to give each bag of red cells over 30 minutes as this is the time stated on the prescription for transfusion of platelets.
- The error was detected by a doctor when taking a blood sample to measure the platelet increment.

SHOT analysis diagram

Critical points:
Positive patient identification essential



Steps in the process where an error was made or an opportunity to detect the primary error was missed



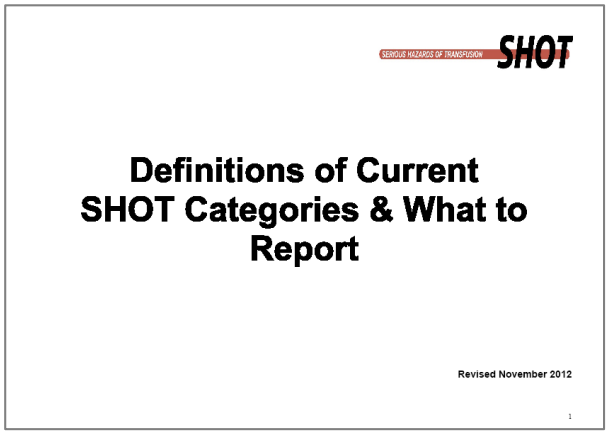
Key Recommendation

Process mapping, and audit with consideration of human factors to design out medical errors

Additional Information

Following documents available on website to help with reporting:
www.shotuk.org

- SHOT reporting definitions
- SHOT reporting toolkit
- Clinical Lessons
- Laboratory Lessons



Also available:

- SHOT reports
- SHOT summaries
- Supplemental data

Acknowledgements

- YOU for reporting, and listening
- SHOT Team in Manchester
- SHOT Steering Group and Working Expert (Writing) Group