ANNUAL SHOT REPORT 2017 SUMMARY

3230 TOTAL REPORTS
85.5% ERRORS
21 deaths, 14 preventable

Key SHOT messages

Do not assume, verify: At each step in the transfusion process, do not assume that no errors have been made in previous steps; verify each step, particularly patient identification.

Human factors: Failure of communication, distractions, interruptions, wrong assumptions, poor handovers and overriding alerts in the laboratory information systems are all important contributory factors.

What went wrong? Thorough root cause analyses are essential and must identify attributable system-related and human factors so that appropriate actions can be instituted.

Is your staffing adequate? Inadequate staffing, lack of training and poor supervision are all likely to be associated with an increased risk of error.

Do not delay: Emergency transfusion saves lives. Do not let the patient bleed to death or die from anaemia.

Guidelines or rules? Guidelines must not be translated into inflexible rules which may put patients at risk. Proportionate application of knowledge and experience may lead to a different course of action in individual circumstances. However, the final bedside check is a rule and must be completed in full.

TACO alert: Patients who develop respiratory distress during or up to 24 hours after transfusion where transfusion is suspected to be the cause must be reported to SHOT. The national comparative audit of TACO in 2017 demonstrated that risk factors are being missed.

It is the clinician’s responsibility to know the patient’s specific transfusion requirements.

Key recommendation 1

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.

Key recommendation 2

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.

Key recommendation 3

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 (repeat from last year).

ABO-incompatible red cell transfusions 2016 and 2017

4 ABO-incompatible red cell transfusions

606 ABO-incompatible near miss events

ABO-incompatible transfusions: In 2017 there was 1 ABO-incompatible red cell transfusion (administration error), 4 of FFP and 2 of platelets.

Have you instituted the full bedside checklist? Many more near miss events could have resulted in ABO-incompatible red cell transfusions.

Wrong blood in tube errors will not be detected by the bedside check so get it right from the start.

See full SHOT Report (www.shotuk.org) for additional recommendations in the following chapters: Information Technology Incidents, Adverse Events Related to Anti-D Immunoglobulin, Immune Anti-D in Pregnancy, Transfusion-Associated Circulatory Overload, Cell Salvage and Paediatric Summary.
Febrile, allergic and hypotensive reactions (FAHR) are the most common serious and unpredictable reactions:

- For febrile reactions alone, give paracetamol.
- For allergic reactions give an antihistamine as first line; give adrenaline if anaphylaxis is suspected.
- The effect of steroids is delayed by several hours, will have no immediate effect, and should only be used to prevent a late recurrence. The use of steroids may further immunosuppress already immunocompromised patients and increase the risk of side effects such as infection.

### Approximate risks associated with transfusion compared with other life activities: UK data (log scale)

**Transfusion-related deaths 2010 to 2017 n=136**

- Pulmonary complications: 73 (53.7%)
- TRALI: 5
- TAO: 60
- TAD: 8

**Death related to transfusion (with imputability) reported in 2017 n=21**

- HTR: 1
- Under and overtransfusion: 1
- TAD: 1
- Delays: 5
- TACO: 2
- Febrile/allergic reactions: 1

**Summary data for 2017 all categories n=3230**

- NM: Near miss 426
- Anti-D: Anti-D immunoglobulin errors 1359
- IBCT: Incorrect blood component transfused 907
- FAHR: Febrile, allergic and hypotensive reactions 284
- HSE: Handling and storage errors 243
- RBIP: Right blood right patient 200
- ADU: Avoidable transfusion 101
- ADU: Delayed transfusion 95
- TACO: Transfusion-associated circulatory overload 92
- TRALI: Transfusion-related acute lung injury 42
- TAD: Transfusion-associated dyspnoea 29
- CS: Cell salvage 20
- UCT: Unclassifiable complications of transfusion 17
- TRALI: Transfusion-related acute lung injury 11
- TTI: Transfusion-transmitted infection 3
- TAD: Transfusion-associated dyspnoea 3
- CS: Cell salvage 2
- TACO: Transfusion-associated circulatory overload 1
- HTR: Haemolytic transfusion reactions 0
- ADU: Over- or undertransfusion and PCC 0
- IBCT: Incorrect blood component transfused 0

### Death related to transfusion (with imputability) reported in 2017 n=21

- Preventable deaths n=14/21 (66.7%)
- HTR: Haemolytic transfusion reactions
- Under and overtransfusion
- TAD: Transfusion-associated dyspnoea
- Delays
- TACO: Transfusion-associated circulatory overload
- Febrile/allergic reactions

Sources of data: Many of these are found online in the UK office for national statistics. Red outline indicates SHOT data, blue outline indicates data from other sources.

ISTARE is the International Haemovigilance Network database for the surveillance of adverse reactions and events in donor and recipients. Viral transmissions denote risk of infection, not deaths. HCV=hepatitis C virus; HIV=human immunodeficiency virus; HBV=hepatitis B virus. A full list of sources is available in supplementary information on the SHOT website www.shotuk.org.
Laboratory errors (n=409) showing at which stage in the transfusion process the primary error occurred with outcome

The 9 steps in the transfusion process

Overview of reports where an incorrect blood component was transfused in 2017 n=307

Incorrect blood component transfused n=307 (100%)

Clinical 149 (48.5%)
Laboratory 158 (51.5%)

Paediatric reports where incorrect blood components were transfused n=41 (by age)

Near miss wrong component transfusions are mostly due to wrong blood in tube (WBIT) incidents

WBIT 87.8%

Message for laboratory staff
- Know your components and their compatibility
- Always seek the patient’s historical transfusion record
- Do not override warning alerts
- Follow the correct procedures

Laboratory errors and near miss incidents n=740 showing at which stage the primary error occurred
In 2017 the UK Blood Services collected approximately 1.9 million donations. Fifty serious adverse events of donation (SAED) have been reported last year (1 in 38,273 donations). Serious adverse events are very rare but do occur and can have a significant impact on donor health and donor retention.

### Breakdown of Serious Adverse Events in 2017

**SAED Categories**

- Arm problems >12/12... 13%
- Fracture, 15
- Hospital admission, 13
- RTC, 1
- Other, 1
- ACS, 2
- Death, 1

ACS=acute coronary syndrome
RTC=road traffic collision

- 18/50 SAED were as a direct result of a delayed vasovagal reaction (36%)
- 17/50 SAED were related to persistent arm problems more than one year post donation (34%)

**Female donors accounted for nearly 2/3 of SAED reported**

- In general 9/10 donors who suffer an SAED are withdrawn from future donations

### Key Messages

- Donors need a clear understanding of what, when and how to report adverse events
- Whole blood and component donation is safe but complications do sometimes occur
- Vasovagal events resulting in donor hospitalisation or injury and nerve injuries post venepuncture continue to be the commonly reported SAED

No reports of anaphylaxis, haemolysis or air embolism due to component donation reported in 2017

All 15 fractures were related to vasovagal reactions, 2 immediate and 13 delayed reactions

There was one report of a donor death <7 days of donation and two reports of acute coronary syndrome <24 hours of donation