**Key SHOT messages**

- Learning from near misses is vital to prevent future incidents
- Investigating incidents should be thorough, systematic and identify systemic issues
- Staffing challenges, including staff shortages and gaps in skill mix, need to be addressed to improve safety
- Rethinking transfusion education, including more technology-enhanced learning, learning in teams, non-technical skills training, patient safety training and human factors awareness
- Standard operating procedures need to be simple, clear, easy to follow and explain the rationale for each step—this will help engage staff and improve compliance

**Key recommendations**

- All NHS organisations must move away from a blame culture towards a just and learning culture
- All clinical and laboratory staff should be encouraged to become familiar with human factors and ergonomics concepts
- All transfusion decisions must be made after carefully assessing the risks and benefits of transfusion therapy. Collaboration and co-ordination among staff is vital

**The A-E Decision Tree to facilitate decision making in transfusion**

1. **Assess patient**
   - Any avoidable blood loss (frequent, unnecessary tests/interventions)

2. **Blood results (all) reviewed including trends – valid and reliable?**
   - Best treatment option—is transfusion the best treatment option? If yes, what components needed, how many, what order and any specific requirements needed?

3. **Consent for transfusion**
   - Correctable factors—address all correctable factors like bleeding, haematinic deficiency

4. **Do not forget other measures**
   - (vitamin K, tranexamic acid, cell salvage)
   - Do not hesitate to challenge
   - Do not forget to document

5. **Ensure communications with laboratory**

**ANNUAL SHOT REPORT 2018 SUMMARY**

- **3326 TOTAL REPORTS**
  - **87.3% ERRORS**
  - 20 deaths, 14 preventable

**Possibly preventable 4.4%**

**Not preventable 8.3%**

**Errors 87.3%**

Errors account for the majority of reports: 2905/3326 (87.3%)
Summary data for 2018 all categories n=3326
Near miss reporting continues to teach valuable lessons and contributed to 1451 (43.6%) of the total 3326 reports.

- Reactions
- Overtransfusion
- Transfusion-related deaths 2010 to 2018 n=156
- Reported in 2018 n=20
- Near miss n=1451
- Allergic reactions (TTI), and 7 deaths related to other unclassified reactions
- Five classified under the ADU category
- Two transfusion-transmitted infections
- ‘Other’ includes 1 each for post-transfusion purpura (PTP), transfusion-associated graft-versus-host disease (TACO+HD) and anti-D immunoglobulin related
- There were 0 in the available, over or undertransfusion (ADU) category
- 2 transfusion-transmitted infections (TTI), and 7 deaths related to other unclassified reactions

Death related to transfusion (with imputability)

Reported in 2018 n=20

- TTI: Transfusion-associated circulatory overload
- HTR: Haemolytic transfusion reactions
- ADU: Over or undertransfusion
- TRALI: Transfusion-related acute lung injury
- TACO: Transfusion-associated circulatory overload
- UCT: Unclassifiable complications of transfusion
- MHP: Manual haematology processor
- WCT: Wrong component transfused

ABO-incompatible transfusions in 2018

- ABO het
- ABO antihel checker mix-up
- ABO incompatible

Transfusion-related deaths 2010 to 2018 n=156

- Assorted combinations
- Depleted
- Delays
- Failed
- TACO

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.

Key messages for laboratory staff

- Many of the incidents reported appeared to result from failure to follow correct procedures, inadequate processes, omitting steps or wrong procedure being performed

- Robust root cause analysis using ergonomics/human factors approach should be undertaken to identify quality management systems (QMS) improvements to mitigate these errors

- All laboratory staff must complete annual good manufacturing practice (GMP) training (European Union: Guidelines for Good Manufacturing Practice 2015)

The 9 steps in the transfusion process

1. REQUEST
2. SAMPLE TAKING
3. SAMPLE RECEIPT
4. TESTING
5. COMPONENT SELECTION
6. COMPONENT LABELLING
7. COMPONENT COLLECTION
8. PRESCRIPTION
9. ADMINISTRATION

Problems continue to be reported in the management of major haemorrhage

- Communication: MHP activation communication to switchboard and/or laboratory

- Failure to follow MHP correctly

- Laboratory—dysfunctional—output, pressure and errors

- Components received and interpreted—patient service access

- Wrong assumptions

- Porter availability

- IT/iv machine issues

- Lack of knowledge

All clinical and laboratory Standard Operating Procedures (SOP) must be CLEAR

- Clear and concise
- Logical and meaningful
- Easy to follow and effective
- Always workable and simple
- Realistic and relevant

Summary of Paediatric reports for 2018 (n=123)

- One death was reported secondary to TACO, in part attributable to an error in the process of performing an exchange transfusion

- Paediatric FAHR most often occurred following plagiated transfusions (21/30; 70.0%), the usual FAHR pattern for paediatrics

- Four errors were caused by acting on inaccurate or old blood results

- Communication errors continue to be an issue across categories

- Errors related to transfusion volumes remain an issue (5 cases)

Reports of pulmonary complications by year 2008–2018

- Reports of pulmonary complications continue to make the greatest contribution to death and major morbidity after transfusion.
Serious Adverse Events following Blood Donation reported to the UK Blood Services in 2018

In 2018 the UK Blood Services collected approximately 1.9 million donations. Forty three serious adverse events of donation (SAED) were reported (1 in 43,794 donations). Serious adverse events are very rare following blood donation but do occur and can have a significant impact on donor health and donor retention.

Breakdown of Serious Adverse Events in 2018

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Admission</td>
<td>12</td>
<td>35%</td>
</tr>
<tr>
<td>Needle Insertion</td>
<td>16</td>
<td>37%</td>
</tr>
<tr>
<td>Fracture</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>RTC=road traffic collision</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ACS=acute coronary syndrome</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Air Embolism</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other*</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Female donors accounted for 23/43 (53%) SAED

15/43 SAED were as a direct result of a vasovagal reaction

16/43 SAED were related to persistent arm problems 12/12 post donation

7/10 donors who suffered an SAED were withdrawn from future donations

Key Messages

Donor safety is of paramount importance and is assured, in as far as it can be, by donor selection guidelines, standard operating procedures, adequately trained staff and appropriate facilities.

Complications during or following donation can happen despite the safety measures in place.

Arm problems relating to needle insertion persisting for more than a year and vasovagal events resulting in donor hospitalisation or injury continue to be the most frequently reported SAED.

2/43 SAED related to upper limb deep vein thrombosis following donation.

8/9 fractures were related to vasovagal reactions, 4 immediate and 4 delayed reactions.

1 report of a donor death <7 days of donation and 1 report of acute coronary syndrome <24 hours of donation.

RTC=road traffic collision, ACS=acute coronary syndrome

*Other = Upper limb deep vein thrombosis