Serious Hazards of transfusion (SHOT) Annual report 2018

Dr Heidi Doughty MD PhD
Consultant in Transfusion Medicine
National Heath Service Blood and Transplant
United Kingdom
Disclaimers

https://www.shotuk.org/

• The contents of the presentation are provided by SHOT together with my own slides

• I am presenting them as a long standing member of the steering committee

• Some of the comments are my own but have been approved by the new SHOT Medical Director, Dr Shruthi Narayan

• I also represent the British Blood Transfusion Society (president 2019 – 2021)

• I have no conflicts of interest

https://www.bbts.org.uk/
Report
Summary
Supplement
Resources

SHOT 2018

An introduction
SHOT: The UK haemovigilance scheme (1996-)

• SHOT collects and analyses information on transfusion reactions and adverse events from all healthcare organisations in the UK that are involved in blood transfusion.

• This includes transfusion of red cells, plasma, cryoprecipitate and platelets. Additionally, SHOT has been collecting errors related to Anti-D Ig administration, immune anti-D cases and errors related to prothrombin complex concentrates.

SHOT is funded by the 4 UK Blood Services and is affiliated to the Royal College of Pathologists. Its activities are overseen by a steering group whose membership includes representatives from the Royal Colleges (medical and nursing) and other specialist societies.
Blood components issued in UK and percentage of SHOT reports submitted by UK country

Approx 2.3 million components
Regulations mandating haemovigilance systems 2002 -

- Blood Safety and Quality Regulations (BSQR) 2005
- Blood Safety and Quality (amendment) Regulations 2006/2013
Haemovigilance in the UK

‘Competent Authority’ for EU Blood Safety and Quality Regulations (BSQR 2005)

Monitor quality management systems (QMS) in Blood Service and Hospital Labs

Confidential enquiry: National Haemovigilance scheme since 1996

Serious adverse reactions and events in both labs and clinical environment (vein to vein)

PROFESSIONALLY MANDATED reporting

STATUTORY reporting
UK dual HV System - an overview

Key Messages and Recommendations
Education

Steering Group
Working Expert Group
SHOT Core Team

Donor to Patient

2.34 million components issued in UK annually

Collection, processing, testing, storage and distribution

~4000 adverse events/year

SABRE reporting Portal

Serious Adverse Events
(SQRST, 2005)

Serious Adverse Reactions

MHRA

Hospital Transfusion Team

Slide courtesy - Sharran Grey
2018 Headline data
Categorisation of reports analysed in 2018

Total reports: 3326
Errors: 87.3%

- Near miss: 1451
- All errors: 216
- Error reports: 1238 (74.6%)
- Pathological reactions: 396 (23.9%)
- Others (CS & UCT): 25 (1.5%)

RBRP = right blood right patient; CS = cell salvage; UCT = unclassifiable complications of transfusion
Summary data for 2018 all categories
n=3326 (ranked by number)
<table>
<thead>
<tr>
<th>Reporting Category</th>
<th>Death definitely related</th>
<th>Death probably related</th>
<th>Death possibly related</th>
<th>Major morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed transfusion</td>
<td></td>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Overtransfusion</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>FAHR</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>HTR</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>IBCT-WCT (clinical)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>IBCT-WCT (laboratory)</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>IBCT-SRNM (laboratory)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>UCT</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>TACO</td>
<td></td>
<td>2</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>TAD</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>TRALI</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>TTI</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0</strong></td>
<td><strong>8</strong></td>
<td><strong>12</strong></td>
<td><strong>109</strong></td>
</tr>
</tbody>
</table>
Deaths related to transfusion (with imputability) reported in 2018 n=20

- TTI: Definite 1, Probable 2
- HTR: Probable 2
- Overtransfusion: Definite 1
- TAD: Definite 2, Probable 1
- Delays: Definite 2, Probable 6
- TRALI: Definite 1
- TACO: Definite 2, Probable 3

Preventable deaths n=14/20 (70.0%)
In the last 8 years – pulmonary complications have accounted for half of the transfusion related deaths reported.
2018 Updated TACO pre-transfusion checklist and management

**TACO Checklist**

**Red cell transfusion for non-bleeding patients**

1. Does the patient have a diagnosis of ‘heart failure’ congestive cardiac failure (CCF), severe aortic stenosis, or moderate to severe left ventricular dysfunction?
2. Is the patient on a regular diuretic?
3. Does the patient have severe anaemia?
4. Is the patient known to have pulmonary oedema?
5. Does the patient have respiratory symptoms of undiagnosed cause?
6. Is the fluid balance clinically significantly positive?
7. Is the patient on concomitant fluids (or has been in the past 24 hours)?
8. Is there any peripheral oedema?
9. Does the patient have hypoalbuminaemia?
10. Does the patient have significant renal impairment?

**If ‘yes’ to any of these questions**

1. Review the need for transfusion (do the benefits outweigh the risks)?
2. Can the transfusion be safely deferred until the issue can be investigated, treated or resolved?
3. Consider body weight dosing for red cells (especially if low body weight)
4. Transfuse one unit (red cells) and review symptoms of anaemia
5. Measure the fluid balance
6. Consider giving a prophylactic diuretic
7. Monitor the vital signs closely, including oxygen saturation

---

Due to the differences in adult and neonatal physiology, babies may have a different risk for TACO. Calculate the dose by weight and observe the notes above.

**TACO** = **transfusion-associated circulatory overload**
In 13 cases delays were experienced during MHP activation and in a further 6 cases with major haemorrhage but without MHP activation.

Delays can contribute to patient death. Every second counts!
Poor communication is the most common factor contributing to errors in MHP-related reports (results as %)

- Communication: 88.2%
- Procedures not followed: 47.1%
- Lack of knowledge: 38.3%
- Porter availability: 17.6%
- Equipment failure: 14.7%
- Assumptions: 8.8%
- Staff shortages: 8.8%
- Sample errors: 5.9%

IT = information technology
The human factor
SHOT improves transfusion safety by:

- Improving standards of hospital transfusion practice
- Educating users on transfusion hazards and their prevention
- Aiding production of clinical guidelines
- Informing policy within the UK Blood Services
- Informing national policy on transfusion safety within the UK
SHOT BENEFITS: serial reports show the impact of past recommendations and suggested actions on serious adverse reactions - so that these are now rare

- Transfusion-transmitted infections, particularly bacterial transmission
- Transfusion-related acute lung injury
- Transfusion-associated graft versus host disease
- ABO-incompatible transfusion*

Blood components are very safe, but our practice can be safer
Number of ABO-incompatible red cell transfusions 1996-2018
Cumulative data for all SHOT categories
1996 to 2018; Report numbers = 21,474
LEAP TO Transfusion Safety

- Strong, supportive, shared, authentic leadership
- Adding the ‘why’ to the ‘what’ and ‘how’ in education
- Interprofessional learning, interactive, technology enhanced learning
- Everyone counts
- Appropriate resource allocation
- Design processes that are easy to follow and build safer systems
- Learning culture
- Just culture
- Empowered and engaged staff
All NHS organisations must move away from a blame culture and 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 are vital.
Acknowledgements

- Dr Shruthi Narayan
- The SHOT team
- The SHOT Working Expert Group
- The SHOT Steering Group
- MHRA haemovigilance team
- The vigilant reporters and hospital staff who share their incidents
- The UK Forum for funding

Many resources on website www.shotuk.org