HIGHLIGHTS FROM THE SHOT REPORT 2006

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Chair, SHOT Steering Group

SHOT, UK NEQAS (BTLP), NBTC Meeting
20th November 2007
UK haemovigilance 2007

• 10th annual SHOT report
• International ‘gold standard’
• SHOT continues to collect and analyse data beyond statutory requirements of BSQR
• United SHOT/MHRA haemovigilance system
  • All reports via SABRE
  • BCC and its AE subgroup
  • fulfils legislative and professional aspects
SHOT – Changes in 2007

• Dorothy Stainsby

• Clare Taylor new NMC

• Tony Davies new Transfusion Liaison Practitioner

• Funding for additional staff and new IT
2006 KEY FINDING – 1

13% reduction in number of reports analysed in SHOT categories

However, overall increase in number of adverse incidents via SABRE
Specific advice for users
(Chapter 2)

• Current reporting categories, definitions and what to report
• Subdivisions of IBCT
• New reporting categories for 2008
• Pilot reporting categories planned
• Additional reporting to MHRA
  • Reagents, equipment, devices to Devices section of MHRA
  • Report to SHOT if blood component was transfused to pt
  • Batched pharmaceutical products - Medicines section MHRA
  • Adverse event reports of Octaplas and anti-D to SHOT
• The relationship between SHOT, MHRA and SABRE
SHOT reports analysed
1996-2006 (n=3770)

* Formerly DTR
SHOT reports analysed 2006 (n=531)
Mortality and morbidity 2006

• 4 transfusion related deaths
  • 2 incorrect prescribing
  • 1 bacterial contamination: klebsiella pneumonia
  • 1 TRALI

• 19 major morbidity

• 508 minor or no morbidity
  • includes 392 ‘no harm’ IBCT events
Incorrect blood component transfused (n=400)

<table>
<thead>
<tr>
<th>Type of event</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Wrong blood’ events</td>
<td>54 (14%)</td>
</tr>
<tr>
<td>Other pre-transfusion testing errors</td>
<td>28 (7%)</td>
</tr>
<tr>
<td>Blood of wrong group to recipients of ABO mismatched stem cell transplant</td>
<td>8 (2%)</td>
</tr>
<tr>
<td>Failure to meet special requirements</td>
<td>108 (27%)</td>
</tr>
<tr>
<td>Inappropriate or unnecessary transfusions</td>
<td>51 (13%)</td>
</tr>
<tr>
<td>‘Unsafe’ transfusions (handling/storage errors)</td>
<td>74 (19%)</td>
</tr>
<tr>
<td>Events relating to anti-D Ig</td>
<td>77 (19%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>
‘Wrong blood’ events
54 cases, 79 errors

High risk!

79 separate errors
• 46% laboratory
• 57% clinical areas
• 33/79 errors - failure of ‘bedside’ check’!
2006 KEY FINDING – 2

ABO incompatible transfusions are again lower: 8 cases in 2006
NPSA SPN 14

• Competency-based training and assessment
• Stop use of compatibility forms as part of final bedside check
• Examine feasibility of...
Excess errors out of hours

Avoid blood transfusions at night!
Inappropriate or unnecessary transfusions – High risk!

Sites/stages of errors leading to inappropriate transfusion

<table>
<thead>
<tr>
<th>Primary error</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable sample for FBC, e.g. from ‘drip arm’ or from wrong patient</td>
<td>22</td>
</tr>
<tr>
<td>Also laboratory failed to note unsuitable sample</td>
<td>4</td>
</tr>
<tr>
<td>Analytical error (haematology laboratory)</td>
<td>2</td>
</tr>
<tr>
<td>Analytical error (near-patient testing)</td>
<td>2</td>
</tr>
<tr>
<td>Reason for wrong result not known</td>
<td>4</td>
</tr>
<tr>
<td>FBC misinterpreted or wrongly transcribed</td>
<td>7</td>
</tr>
<tr>
<td>Prescription error (incorrect volume or rate, failure to check FBC)</td>
<td>9</td>
</tr>
<tr>
<td>Wrong component collected from blood bank</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total cases</strong></td>
<td><strong>51</strong></td>
</tr>
<tr>
<td><strong>Total errors</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>
Two fatal errors!

**Case 1**
Lack of care and accuracy in paediatric prescribing results in overtransfusion
- Very sick preterm infant, platelets 48
- Platelets 15 mL/kg prescribed
- Transfused 50 mL/kg, 300 mL over 30 mins
- Infant suffered cardiorespiratory arrest and died

**Case 2**
Faulty blood sampling technique and a wrong decision to transfuse
- 80 year old woman, fractured neck of femur
- Post-op Hb 3.9g/dL, diluted by IV infusion
- Post-op Hb was 9.5g/dL, little intra-op bld loss
- 6 units red cells given over 16 hrs, post-tx Hb 18.2
- Death from cardiac failure
2006 KEY FINDING - 3

Junior doctor errors
125 cases, 2 fatal

46: inappropriate transfusion

79: special requirements not met
Anti-D Ig (n=77)

Cases of most concern

1. Administration of anti-D post-delivery late or omitted

2. Misunderstanding of antenatal serology – failure to monitor antibody level appropriately

Case 24

- Misinterpretation of an antibody panel after patient given anti-D Ig at 16 wks
- Infant – phototherapy for 5 wks, 3 top-up transfusions
- Review – no SOP for lab testing following prophylactic anti-D, lab report at 28 weeks inappropriately authorised
In recent years, increasing number of IBCT errors arising in hospital laboratories.
2006 Near Miss

• Survey over 7 months, all hospitals invited
• 126 participants, 136 hospitals: 34% return rate
• 2702 events
• 1342 (49.6%) related to sampling
• Numbers of reports 0-627
Immune reactions

- 85 Acute reactions (68 in 2005)
- 34 Haemolytic reactions
  - 11 acute, 23 delayed
- 12 TRALI
  - of which 3 were ‘highly likely’ or ‘probable’
  - 1 major morbidity, 1 death
- 0 Post-transfusion purpura
- 0 TA-GvHD
Acute reactions

- No deaths
- 4 major morbidity
  - All anaphylactic/anaphylactoid
- 22 Reactions to FFP
  - in 9 FFP appeared not clinically indicated
  - included 1 cardiac arrest
- 3 cases of TACO
<table>
<thead>
<tr>
<th>Reaction</th>
<th>RBC N = 39</th>
<th>Platelets apheresis N = 11</th>
<th>Platelets buffy coats N = 8</th>
<th>FFP N = 22</th>
<th>Multiple N = 4</th>
<th>Buffy coats N = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated febrile</td>
<td>18</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Minor allergic</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaphylactic/ anaphylactoid/ Severe allergic</td>
<td>11</td>
<td>5</td>
<td>7</td>
<td>15</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TACO</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Hypotension</td>
<td></td>
<td></td>
<td></td>
<td>3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Febrile with other symptoms/signs</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rate per 100,000 units</td>
<td>2.01</td>
<td>11.2</td>
<td>6.6</td>
<td>8.2</td>
<td></td>
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</tr>
</tbody>
</table>
Haemolytic transfusion reactions

- 1 death – unrelated to transfusion reaction
- No serious morbidity, 2 pts haemolysis due to ABO abs from group O plts
- Group O apheresis platelets which test neg for high-titre haemolysins can cause HTR, partic. in paed. pts.
- Weak complement binding abs (anti-Kidd) may be missed when using plasma, unless more sensitive techniques used e.g. enzyme IAT
- Only 35% of investigations included an eluate made from pt’s red cells
- Communication problems contribute to DHTRs
- Abs to low frequency antigens - Acute reactions not necessarily AHTR even if transfusion of unit to which there is an antibody unless evidence of haemolysis
Post-transfusion purpura
TA-GvHD
Transfusion transmitted infections

- 29 cases referred for investigation – 1 via MHRA but should have come via routine NBS/HPA surveillance
- 2 confirmed reports
  - 1 fatal klebsiella pneumoniae from pooled platelet pack
  - 1 streptococcus bovis from apheresis platelets – patient recovered
- + 1 report of vCJD received via surveillance scheme
  - Donor same as that of case reported in SHOT 2005
  - 4th case of vCJD
- No confirmed viral transmissions
2006 Recommendations
3 sections

• SHOT Recommendations of the Year

• Active recommendations from previous years: update

• Specific recommendations relevant to each reporting category
Recommendations of the Year

• Inclusion of transfusion medicine in core curriculum for junior doctors

• Specialty accredited laboratory and clinical staff in all hospitals
  • BBTS certification for lab practice or as transfusion practitioner
  • Hospital labs should have an accredited transfusion specialist at all times

• Comprehensive reporting to SHOT by all hospitals
IBCT - the Future

IBCT 2006

• IBCT 75% of reports (47% in 1996/7)
• 50% not IBCT but correct components given incorrectly or handled incorrectly
• Anti-D numbers have increased as specifically sought by SHOT

IBCT in the future

• ‘Error’ section will be divided into constituent parts
• New questionnaires for emerging categories
• Include reports of inappropriate use and where harm from non- or under-transfusion
• Anti-D to be a separate category
• Handling and storage errors also to be a separate category
Other developments

• Near Miss: 2008 pilot, initial focus on sample errors
• TACO – new questionnaire, launch 2008
• Cell salvage – new subgroup working with SHOT
• Denominator data – ?via MHRA compliance forms or SABRE annual returns; amend reporting forms
• SHOT to support the work of ACSBTO: Advisory Committee for the Safety of Blood Tissues and Organs
• Funding granted for additional staff and new IT to make all this possible!
Acknowledgements

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