SHOT data 2008

Part 2

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“Some details have been blacked out on privacy and security grounds”
This talk…

- **SHOT 2008 data – Part 2**
  - Immunological reactions
  - TACO and TAD
  - Transfusion-transmitted infection
  - Autologous transfusion
  - Paediatric cases

- **Key message and main recommendations**
Acute transfusion reactions

Figure 9
ATR cases 1996–2008
Acute transfusion reactions

The graph shows the percentage of reports for different types of acute transfusion reactions:

- **Severe allergic or anaphylactic**
  - Multiple components: 8
  - FFP: 15
  - Platelets: 23
  - RBC: 23

- **Minor allergic**
  - Multiple components: 2
  - FFP: 10
  - Platelets: 23
  - RBC: 10

- **Isolated febrile**
  - Multiple components: 3
  - FFP: 10
  - Platelets: 10
  - RBC: 104
Emergency warfarin reversal - 1

- Post-FFP INR 2.3 (range 1.6-3.8)
- Post-PCC+/- FVII, INR completely corrected in 28/29 pts
- Median factor IX levels post-treatment
  - FFP 19 iu/dL
  - PCC+/- FVII 69 iu/dL

CONCLUSION
Haemostatically effective levels of factor IX cannot be achieved, in most instances, with FFP reversal

Emergency warfarin reversal – 2

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• Attention drawn to BCSH guidelines
• Prothrombin complex concentrate (PCC) - product of choice for the warfarin reversal when major bleeding
• Use PCC also for reversal for emergency surgery
• Only use FFP if PCC is not available

PCC should be available in all UK hospitals
Haemolytic transfusion reactions (HTR)

Figure 12
Number of cases of HTR reviewed since 1996

Year of report

Number of reports

- 1996-97: 23
- 1997-98: 25
- 1998-99: 30
- 1999-00: 24
- 2000-01: 39
- 2001-02 (15 months): 47
- 2003: 25
- 2004: 43
- 2005: 28
- 2006: 34
- 2007: 23
- 2008: 55

Total number of reports: 55
Group A patients who received Group O platelets \( (n=4) \)

- All platelets labelled negative for high-titre anti-A (1 had high titre anti-A)
- 1 major morbidity, 1 died (underlying disease)
- 13 previous reports to SHOT
- 10/13 were <18 yrs
Group A patients who received Group O platelets (contd.)

LEARNING POINTS

• Group O platelets for non-group O patients, particularly paediatric – LAST RESORT
• Prioritise conflicting special requirements

NEW RECOMMENDATION

• Blood Services – review screening
Haemolytic transfusion reactions

- Kidd antibodies in majority
  Not detected by any single technique
- 2 serious reactions in patients known to have antibodies

NEW RECOMMENDATIONS

- Actively seek transfusion and antibody history
- National register
Transfusion-related acute lung injury

Figure 16
Deaths at least possibly due to TRALI and number of suspected TRALI reports by year

Key
- Orange bar: Number of deaths
- Green bar: Suspected TRALI reports

Year of report:
- 1996-97
- 1997-98
- 1998-99
- 1999-00
- 2000-01
- 2001-02 (15 months)
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008

Number of cases:
- 0
- 5
- 10
- 15
- 20
- 25
- 30
- 35
- 40
Figure 15
Cases of TRALI with concordant donor antibody in FFP or platelet components 2003–2008
Post-transfusion purpura

Figure 19
Number of cases of confirmed PTP reported to SHOT each year
Transfusion-associated graft-versus-host disease

Figure 20
Number of cases of TA-GvHD reported to SHOT each year

- Year of report:
  - 1996-97
  - 1997-98
  - 1998-99
  - 1999-00
  - 2000-01
  - 2001-02 (15 months)
  - 2003
  - 2004
  - 2005
  - 2006
  - 2007
  - 2008

- Number of cases:
  - 1996-97: 4
  - 1997-98: 4
  - 1998-99: 4
  - 1999-00: 4
  - 2000-01: 1
  - 2001-02: 0
  - 2003: 0
  - 2004: 0
  - 2005: 0
  - 2006: 0
  - 2007: 0
  - 2008: 0
TACO: transfusion-associated circulatory overload
TACO: transfusion-associated circulatory overload

- Male 73 yrs, chronic anaemia Hb 5.4, SOB
- 2 unit RBC transfusion prescribed
- SOB↑ during 2nd unit, pulse↑, BP↑, O2 sat↓
- Admitted to ITU

- Male 64 yrs, cholangiocarcinoma
- 11 units FFP (~2750mL) + 250 mL colloid
- Indication: “patient’s disease” – no bleeding; no record vitamin K given
- SOB, peripheral oedema, CXR pulmonary oedema
- Admitted to ITU
TACO

- 1 death, 6 major morbidity + 4 life-threatening
- Incidence in UK 0.63 per 100 000 components
  Holland 3.7 per 100 000; Quebec 4.4%

RECOMMENDATIONS
- Increased recognition and reporting
- Education and training
- Careful clinical assessment, consider diuretic
- Careful monitoring and action
TAD: transfusion-associated dyspnoea

- Respiratory distress within 24 hours – not meeting criteria for TRALI, TAO or ATR
- Important that all pulmonary reactions are reported to SHOT
- Accurate information - systematic approach to investigation and management
Transfusion-transmitted infection

Figure 23
Number of viral and parasitic TTI incidents, by year of report and infection type
(Scotland included from October 1998)"†
Figure 22
Number of bacterial TTI incidents, by year of report and type of unit transfused
(Scotland included from October 1998)
Figure 21

*Staphylococcus aureus* in apheresis platelet unit
Bacterial contamination 1996 – 2008
40 cases: 10 deaths, 26 major morbidity

Measures to reduce bacterial sepsis
• Donor selection
• Donor arm cleansing
• Diversion of first 20 - 30 mL
• Visual inspection of units
• Pathogen inactivation?
Autologous transfusion -1

- Pilot (6 months) with UK Cell Salvage Action Group
- 62 hospitals participated, 28 reports from 15
- 25 intraoperative cell salvage
  - 5 operator errors, 14 machine errors,
  - 6 clinical – 1 air embolus, 5 hypotension
- 3 postoperative cell salvage
  - all operator errors
- Denominator data (16 hospitals) over pilot period:
  - ICS: 2328 procedures, range 7-700 per hospital
  - PCS: 1412 procedures, range 4-450 per hospital
Autologous transfusion - 2

UKCSAG
• Need for education and competency assessments – Better Blood Transfusion toolkit
• Comprehensive UK reporting system for cell salvage

RECOMMENDATIONS
• Initial and regular training for all cell salvage operators
• Report all adverse incidents to SHOT
• Monitor patients
• Report all machine failures to MHRA
Paediatric cases

- ~9% (92/1040) reports involve patients <18
- Majority error-related: 54/92, >50% of these <1 yr
  - Special requirements not met in 18
  - Transfusion lab played major role in 29/92 reports
- Marked increase in acute transfusion reactions: 27/92

RECOMMENDATIONS

- Prescribing by those with knowledge and expertise
- Lab BMSs to be aware of special requirements, routine checking – manpower and IT
- Monitor increasing ATR cases
- Report all reactions: TACO, TRALI, neonatal ATR
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- Key message and main recommendations
Key message

National inconsistency of standards:

• Reporting adverse incidents
• Laboratory IT systems
• Competency assessment
Main recommendation 1

Awareness of criteria for reporting adverse events and reactions

Action: HTTs
Main recommendation 2

A national specification for transfusion laboratory IT systems

Action

NBTC and equivalents

software developers
Main recommendation 3

Competency assessment and standardised, transferable competency certification for all staff involved in transfusion

Action: NPSA
3 further main recommendations

4. Discontinue use of the compatibility form for checking patient identification
   Action: HTTs
Time to transfusion reactions

- ATR  66 mins (range <1 min – 440 mins)
- AHTR  <3 hrs 6 reactions, <24 hrs 3 reactions
- TRALI  within 6 hrs (definition)
- TACO  0-2 hrs 56%, 2-6 hrs 22%, 6-12 hrs 22%
- TAD  1hr
- DTR  median 8 days (range 2-22)
3 further main recommendations

5. Ensure adequate observation of patients receiving transfusion
   Action: BCSH
3 further main recommendations (contd.)

6. Develop a supportive culture for hospital staff involved in transfusion
   Action: Trust directors of clinical governance and risk management
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