Where and When is blood transfused?

Right blood, Right place, Right time

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Background

• SHOT has repeatedly shown that 37% of clinical transfusion errors resulting in IBCT occur outside core hours

• Denominator data lacking
  – How many units are transfused out of hours?
The Where and When study

• Collected data on time, location and speciality of all red cell units transfused over a 7 day period in participating hospitals in Northern and Yorkshire regions

• With the support of Northern and Yorkshire RTCs and Hospital Transfusion Teams
Aims

- Identify denominator data on time and location of transfusions and compare with SHOT data for same year
  - Objective 1-establish proportion of units transfused in and out of core hours (08:01-20:00)
  - Objective 2-establish location of transfusions using SHOT headings
  - Objective 3-gather data about use by specialities
How did we do it?

• Approached all HTTs in Northern and Yorkshire regions
• Asked HTC chair to get necessary approval (Data could not be traced to patient)
• Chose “normal” week-3rd week in September 2005, Sunday to Sunday
• Locations
  – Theatre/recovery
  – ITU/HDU/SCBU
  – OP/DU
  – A&E
  – Wards
  – Other

• Specialities
  – Elective surgery
  – Emergency surgery
  – Obstetrics
  – Gynae
  – Haem/Onc
  – GI
  – Paeds/neonates
  – Medicine
• Initial pilot at Bishop Auckland Hospital and Leeds General Infirmary
• Data collected by a member of the hospital transfusion team-usually the transfusion practitioner
• Hospital decided method of data collection
  – Some accessed electronic systems
  – Most had to trawl through notes
  – Footwork!
• Data transferred onto Excel spreadsheet using “Eyes and hands” optical scanning
More transfusions happen on a Wednesday!
Time of transfusion

Northern and Yorkshire data
(3118 units)

SHOT data 2005
(169 reports)
Hospital activity did not affect Out of Hours transfusion rate
Risks-Timing

• Out of hours transfusion is risky
  – 28% (889/3118) of transfusions take place between 2001 and 0800
  – 37% (63/169) of SHOT errors happen then (p<0.03)
Time of transfusion - two large hospitals

- 0800-2000: 75%
- 2000-2400: 29%
- 2400-0800: 12%
- NK: 59%

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Transfusion Location

Northern and Yorkshire data
- Th/recov: 13%
- ITU/HDU/SCBU: 13%
- OP/DU: 2%
- AE: 57%
- Ward: 11%
- Other: 2%

SHOT data 2005
- Th/recov: 2%
- ITU/HDU/SCBU: 11%
- OP/DU: 7%
- AE: 4%
- Ward: 4%
- Other: 72%

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Risks-Locations

• Transfusions in certain clinical areas carry more risk
  – 57.5% (1794/3118) of units are transfused on wards but these account for 72.2% (122/169) of errors (p<0.001)
  – 1.92% (60/3118) of units are transfused in A and E but these account for 4.14% (7/169) of errors
Safe locations?

• Day Units
  – 12.7% of units are transfused in day units but this location accounts for only 4.1% of errors \( (p<0.001) \)

• ITU/HDU/SCBU
  – 13.4% units are transfused in these locations which account for only 6.5% of errors \( (p<0.001) \)
Is it as simple as that?

• No!
Is it as simple as that?

• No!

• Logistic regression shows that the proportion of out of hours transfusions varies:
  – between clinical locations
  – extent of variation depends on day of the week

• But…………..
Do transfusions outside core hours appear risky because they are performed in risky clinical situations?
Out of hours transfusions as a percentage of blood use by location

- Th/Rec
  - 2400-0800: 49
  - 2000-2400: 64
  - 0800-2000: 247

- ICU/HDU/SCBU
  - 2400-0800: 90
  - 2000-2400: 77
  - 0800-2000: 234

- OP/DU
  - 2400-0800: 2
  - 2000-2400: 382
  - 0800-2000: 382

- AE
  - 2400-0800: 16
  - 2000-2400: 19
  - 0800-2000: 18

- Ward
  - 2400-0800: 264
  - 2000-2400: 320
  - 0800-2000: 1144
Which specialities transfuse out of hours?

<table>
<thead>
<tr>
<th>Speciality</th>
<th>0800-2000</th>
<th>2000-2400</th>
<th>2400-0800</th>
</tr>
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<tbody>
<tr>
<td>El S</td>
<td>388</td>
<td>83</td>
<td>55</td>
</tr>
<tr>
<td>Em S</td>
<td>237</td>
<td>96</td>
<td>82</td>
</tr>
<tr>
<td>Obs</td>
<td>61</td>
<td>12</td>
<td>13</td>
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<tr>
<td>Gyn</td>
<td>33</td>
<td>21</td>
<td>17</td>
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<tr>
<td>H/O</td>
<td>69</td>
<td>61</td>
<td>45</td>
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<tr>
<td>Gl</td>
<td>121</td>
<td>72</td>
<td>59</td>
</tr>
<tr>
<td>Paed/neo</td>
<td>40</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Med</td>
<td>415</td>
<td>115</td>
<td>108</td>
</tr>
</tbody>
</table>
Ward-based transfusion as a percentage of total by speciality

<table>
<thead>
<tr>
<th>Ward</th>
<th>El S</th>
<th>Em S</th>
<th>Obs</th>
<th>Gyn</th>
<th>H/O</th>
<th>Gl</th>
<th>Paed/neo</th>
<th>Med</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>249</td>
<td>331</td>
<td>69</td>
<td>70</td>
<td>384</td>
<td>114</td>
<td>34</td>
<td>556</td>
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<tr>
<td>Ward</td>
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<td>115</td>
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<td>437</td>
<td>147</td>
<td>23</td>
<td>556</td>
<td>57</td>
</tr>
</tbody>
</table>

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Conclusions

• Evidence suggests that transfusion outside core hours is associated with more clinical errors
• It appears that not all transfusions outside core hours are urgent
• Use of blood in gynaecology in the Northern and Yorkshire region requires more study
• It would be helpful to repeat this study elsewhere
Thanks!

- To Jeni Whitehead and NBS audit department
- To Northern and Yorkshire RTCs
- To UKT statisticians
- But especially…….
- To all who collected our data!