Improving Practice through National Audit, National Guidelines and SHOT

Megan Rowley
Consultant Haematologist
NHSBT and Imperial

Annual SHOT Symposium 2013
Clinical Audit Measures

Quality

- We need to know what we are doing so that we can work out how to improve.
- We use UK transfusion networks to measure transfusion practice in hospitals against standards taken from national guidelines.
- Understanding reasons for variation and learning from best practice leads to improvement in quality of care to patients.

NCABT is a joint programme between NHSBT and Royal College of Physicians Clinical Effectiveness and Evaluation Unit (CEEU) and covers transfusion practice in the UK.
Patient Blood Management

“A multidisciplinary, evidence-based approach to optimising the care of patients who might need blood transfusion”

“Puts the patient at the heart of decisions made about blood transfusion to ensure they receive the best treatment and avoidable, inappropriate use of blood and blood components is reduced”
NCABT Project Group

Consult with all relevant professional groups when designing and piloting the audit

Analyses the data, makes recommendations and writes the reports and slideshow

Ongoing work with support of steering group, better blood transfusion team and project team

NCABT Project

Planning, piloting and funding

~9000 cases

Message to all blood users

Documentation and Audit Toolkit

Registration, audit protocol and on-line data collection tool

Interim report (2 weeks)
Your-site report & regional slide show (3 months)

Journals articles, regional and national meeting presentations, action plans, implementation tools

NCABT Audit Manager: Mr John Grant-Casey,
Clinical Lead: Dr Megan Rowley,
Steering Group Chair: Professor Mike Murphy

Hospital Transfusion Team

Engage with all relevant local clinicians and undertake data collection and return

Immediately aware of whether practice meets standards

Share good practice
Investigate cause of poor practice
Implement quality improvements

40-70 cases

Message to local blood users
Choice of Audit Topics

This is YOUR audit programme and it is designed to audit topics that affect your everyday practice using audit standards from national guidelines.

*Medical Use of Blood, Platelets in Haematology, Bedside Practice, Consent for Transfusion*

To understand practice where guidelines are unclear or evidence for practice is lacking.

*Paediatrics, Transfusion in Cardiac Surgery*

If adverse events are reported to SHOT.

*Blood Collection, Sample Collection, Anti-D, Transfusion in Sickle Cell Disease*
MISIDENTIFICATION

as a cause of

• Incorrect Blood Component Transfused
• Near Miss/Wrong Blood in Tube
There are many different staff groups involved in delivering the right blood.
• Audit of Blood Collection (2009)
  – area where new technology may improve

• Audit of Bedside Practice (2011)
  – This audit has been repeated 4 times in the last 10 years, background of recommendations and safety initiatives

• Audit of Sample Collection (2012)
  – National/BEST survey in 2004
Blood Collection from the Main Issue Fridge

June 2009: 5059 cases from 140 NHS hospitals and 28 Independent hospitals (80% participation)

Auditors observed blood collection from the main issue fridge using BCSH guidelines as standards

Staff groups collecting blood:
Nurses (38%), Porters (34%)
Healthcare Assistants (22%), Doctors 0.3%
National Data: Potential for Misidentification

Standard 1:
• 3.9% collected blood with no documented patient identification
• 92.8% of the documentation contained four core patient identifiers (2.6% had no ID number)

Standard 2:
• 94.7% used the documented patient ID to check against the blood bag label

In 2.8% (141 cases) blood was collected with no patient ID being available
Prevention of Wrong Blood Collection?

- Training (in 96.5%)
- Competency (in 70%)
- Electronic systems (fully controlled fridge collection in 19%, another 12% partially controlled)

But trained, competent staff using electronic systems still managed to collect blood without following correct procedures.
Sample Collection and Labelling Audit

May, June, July 2012; 38,570 rejected pre-transfusion testing samples from 220 participating sites

- Audit of samples received in the transfusion laboratory that were rejected for mislabelling
- Follow-up of 3 rejected samples per week. Interview the collector to discover the reasons for error
- Organisational survey about policies
Zero-Tolerance?

Policies were in place for taking samples (clinical areas) and accepting samples (transfusion laboratory)

70% stated ‘zero tolerance’ i.e. NO AMENDMENTS but 23% appeared to allow deviations from their own policy
How Common are Mislabelled Samples?

- The rate of mislabelled samples was 2.99%

- There were 99 instances of miscollected samples (WBIT)*
  - 88/146 reported no WBITs
  - 32 reported one
  - 15 sites reported two
  - 7 reported three
  - 4 reported four

* The rate of WBIT could not be quoted as data on repeat samples were not available.

CLINICAL LEAD: DR HAZEL TINEGATE
Preventing Sample Mislabelling?

- 33% or errors were due to incorrect transcription and 24% were attributed to distraction

- Only 64% of staff contacted to find out the cause of the labelling error had been competency assessed
  - 82% phlebotomists, 73% nurses, 72% HCA but doctors 49%
### Who is Mislabelling?

<table>
<thead>
<tr>
<th>STAFF GROUP</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>38%</td>
</tr>
<tr>
<td>Doctor</td>
<td>22%</td>
</tr>
<tr>
<td>Nurse</td>
<td>15%</td>
</tr>
<tr>
<td>Midwife</td>
<td>11%</td>
</tr>
<tr>
<td>Community Midwife</td>
<td>6%</td>
</tr>
<tr>
<td>Phlebotomist</td>
<td>5%</td>
</tr>
<tr>
<td>HCA</td>
<td>2%</td>
</tr>
<tr>
<td>ODA/OPD</td>
<td>1%</td>
</tr>
</tbody>
</table>

No national figures on the proportion of blood samples taken by each staff group.

38% could not be identified from initials or signature (missing or illegible).
Auditors follow a unit of blood to the bedside to observe the wristband and then audit documentation of observations retrospectively

- Background of falling wrong blood errors and increasing number of near miss reports
- New BCSH guidelines
### Cumulative Data from Bedside Audits

<table>
<thead>
<tr>
<th>AUDIT YEAR</th>
<th>2003</th>
<th>2005</th>
<th>2008</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wearing a wristband when transfused</td>
<td>90%</td>
<td>94%</td>
<td>98%</td>
<td>98%</td>
</tr>
<tr>
<td>Wristbands with four ‘core identifiers’</td>
<td>86%</td>
<td>91%</td>
<td>98%</td>
<td>99.5%</td>
</tr>
<tr>
<td>No observations during transfusion</td>
<td>12%</td>
<td>13%</td>
<td>12%</td>
<td>4%</td>
</tr>
</tbody>
</table>

In 2011 only 0.3% (24 cases) had a transfusion without wearing a wristband and no pre-transfusion observations recorded

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**CLINICAL LEAD:**

**DR MEGAN ROWLEY**

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OVERTRANSFUSION

As a result of

• Avoidable, Delayed or Under-transfused (previously Inappropriate and Unnecessary)

As a cause of

• Transfusion Associated Circulatory Overload
Good Patient Blood Management

For all transfusions we should be able to define the

• Indication for transfusion
• ‘Trigger’ combined with symptoms
• ‘Target’ combined with outcome

Audit shows us how well we achieve these principles

Root cause analysis of SHOT reports reinforces these principles

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## Audit of Platelets in Haematology

<table>
<thead>
<tr>
<th>REASON FOR PLATELET TRANSFUSION</th>
<th>Audited episodes in each category</th>
<th>Appropriate</th>
<th>Indeterminate</th>
<th>Outside guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPHYLACTIC</td>
<td>69%</td>
<td>60%</td>
<td>6%</td>
<td>34%</td>
</tr>
<tr>
<td>PRE-PROCEDURE</td>
<td>15%</td>
<td>64%</td>
<td>13%</td>
<td>23%</td>
</tr>
<tr>
<td>THERAPEUTIC</td>
<td>13%</td>
<td>84%</td>
<td>12%</td>
<td>5%</td>
</tr>
<tr>
<td>UNCLEAR</td>
<td>3%</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**CLINICAL LEAD:** DR JANET BIRCHALL & DR LISE ESTCOURT
Medical Use of Blood

September, October, November 2011; 9216 cases
From 181 sites (90% of NHS sites)

Part 1 (2011): All medical red cell transfusions analysed against an ‘appropriate use’ algorithm based on BCSH guidelines

Part 2 (2012): Case note review of selection of ‘inappropriate transfusions’ with consultant review of decision to transfuse

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Appropriate Use Algorithm

1. Was the correct Hb THRESHOLD used?
   - Yes
     - Pre transfusion Hb
       - ≤ 110g/L & Radiotherapy
         - ≤ 90g/L & >65 years & (with marrow failure or with chemotherapy)
           - or
           - ≤ 95g/L & Thalassaemia major
         - ≤ 80g/L & >65 years with no marrow failure and no chemotherapy
           - or
           - ≤ 80g/L & any age with comorbidity
             - Or
             - ≤ 80g/L & ≤ 65 years & (with marrow failure or with chemotherapy)
         - ≤ 70g/L & ≤ 65 years & no comorbidity & no bone marrow failure & no chemotherapy
   - No
     - Likely to be appropriate however consider potentially reversible causes of anaemia

2. Was there a reversible cause of anaemia?
   - Yes
     - If all these are NO then
       - 3. Were there symptoms requiring transfusion? Likely to be inappropriate however consider symptoms and signs of anaemia
   - No
     - CLINICAL LEAD: DR KATE PENDRY
       - 1. Was the correct Hb THRESHOLD used?
         - Yes
           - Pre transfusion Hb
             - ≤ 110g/L & Radiotherapy
               - ≤ 90g/L & >65 years & (with marrow failure or with chemotherapy)
                 - or
                 - ≤ 95g/L & Thalassaemia major
               - ≤ 80g/L & >65 years with no marrow failure and no chemotherapy
                 - or
                 - ≤ 80g/L & any age with comorbidity
                   - Or
                   - ≤ 80g/L & ≤ 65 years & (with marrow failure or with chemotherapy)
               - ≤ 70g/L & ≤ 65 years & no comorbidity & no bone marrow failure & no chemotherapy
         - No
           - Likely to be appropriate however consider potentially reversible causes of anaemia

3. Were there symptoms requiring transfusion?
Pre and Post Transfusion Hb Values

Pre-Transfusion Hb (g/dl)

<table>
<thead>
<tr>
<th>Hb</th>
<th>Pre-Transfusion Hb (g/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.8%</td>
</tr>
<tr>
<td>2-</td>
<td>2.9 - 3.9</td>
</tr>
<tr>
<td>3-</td>
<td>3.9 - 4.9</td>
</tr>
<tr>
<td>4-</td>
<td>4.9 - 5.9</td>
</tr>
<tr>
<td>5-</td>
<td>5.9 - 6.9</td>
</tr>
<tr>
<td>6-</td>
<td>6.9 - 7.9</td>
</tr>
<tr>
<td>7-</td>
<td>7.9 - 8.9</td>
</tr>
<tr>
<td>8-</td>
<td>8.9 - 9.9</td>
</tr>
<tr>
<td>9-</td>
<td>9.9 - 10.9</td>
</tr>
<tr>
<td>10-</td>
<td>10.9 - 11.9</td>
</tr>
<tr>
<td>11-</td>
<td>11.9 - 12.9</td>
</tr>
<tr>
<td>12-</td>
<td>12.9 - 13.9</td>
</tr>
<tr>
<td>13-</td>
<td>13.9 - 14+</td>
</tr>
</tbody>
</table>

Mean Hb – 77 g/L (7.7 g/dL)

Post-Transfusion Hb (g/dl)

<table>
<thead>
<tr>
<th>Hb</th>
<th>No</th>
<th>2-</th>
<th>3-</th>
<th>4-</th>
<th>5-</th>
<th>6-</th>
<th>7-</th>
<th>8-</th>
<th>9-</th>
<th>10-</th>
<th>11-</th>
<th>12-</th>
<th>13-</th>
<th>14+</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>16%</td>
<td>2.9</td>
<td>3.9</td>
<td>4.9</td>
<td>5.9</td>
<td>6.9</td>
<td>7.9</td>
<td>8.9</td>
<td>9.9</td>
<td>10.9</td>
<td>11.9</td>
<td>12.9</td>
<td>13.9</td>
<td>14+</td>
</tr>
</tbody>
</table>

Mean Hb – 99 g/L (9.9 g/dL)

CLINICAL LEAD: DR KATE PENDRY
Patients transfused above and below Hb threshold

Hb Threshold g/L

Above threshold

64% 41% 19% 58%

70 or less 80 or less 90 or less 95 or less 110 or less

National Comparative Audit of Blood Transfusion

2011 Medical Use of Blood Audit – Part 1
Medical Patients: Inappropriate Use

- Overall 48% of patients were transfused outwith standards set by the audit group.

But what does that mean?

- The pre transfusion Hb value alone is not enough - clinical judgement is required.

- Why are patients with potentially reversible anaemia being transfused?

CLINICAL LEAD: DR KATE PENDRY
Transfusion could have been avoided

The consultant supervisors concluded that of the 747 cases, transfusion could have been avoided in 187 cases (25%).
### Transfusion to more than 20g/L above threshold

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Median Hb increment/units transfused (g/L)</th>
<th>IQR increment</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;55</td>
<td>14.0</td>
<td>11.0-16.5</td>
<td>87</td>
</tr>
<tr>
<td>55-64</td>
<td>13.5</td>
<td>11.0-16.5</td>
<td>85</td>
</tr>
<tr>
<td>65-74</td>
<td>12.3</td>
<td>10.0-14.5</td>
<td>71</td>
</tr>
<tr>
<td>75-89</td>
<td>10.5</td>
<td>9.0-14.0</td>
<td>75</td>
</tr>
<tr>
<td>90+</td>
<td>10.0</td>
<td>7.0-12.0</td>
<td>39</td>
</tr>
<tr>
<td>75+</td>
<td>10.5</td>
<td>8.0-13.5</td>
<td>114</td>
</tr>
</tbody>
</table>

Of the 439 cases in Part 2, smaller patients were more likely to be over transfused.
Prescription of Red Cells in Neonates 2010

Comparative data from one region: neonatal blood prescription in mL

Denotes data not supplied

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Prescription of Red Cells in Children 2010

Risk of over-transfusion if blood prescription for children is in units

Denotes data not supplied

CLINICAL LEAD: DR HELEN NEW
How do we influence practice?

- Make recommendations for local and national implementation
- Work with BCSH and other guideline/policy making groups
- Ask transfusion teams to feedback locally
  - Process audits possibly easier to influence than appropriate use audits
  - Junior doctors move on, senior doctors have not got the message
Relationship of NCABT with SHOT

- MD of SHOT on NCABT Steering Group
- Clinical Lead for NCABT on SHOT WEG and Steering Group
- Future NCABT programme addresses areas identified by SHOT
  - Sickle Cell Disease, Anti-D, Consent
Thanks

• To John Grant Casey, David Dalton and Mike Murphy
• To all the NCABT Project Leads; Kate Pendry, Hazel Tinegate, Shubha Allard, Janet Birchall, Lise Estcourt, Dora Foukaneli, Helen New and their project Teams
• To Rebecca Gerrard, Kairen Coffey the Better Blood Transfusion Team/Patient Blood Management Team who support the audits at every stage
• BUT MAINLY THANKS TO YOU! If you didn’t do all the audits we would not have a programme