National Comparative Audit of the Use of Platelets

North West RTC

Prepared by
John Grant-Casey
Project Manager

October 2007
The National Comparative Audit Programme

Background information

- A series of audits designed to look at the use and administration of blood and blood components
- Open to all NHS Trusts and Independent hospitals in the UK
- Collaborative programme between NHS Blood and Transplant & Royal College of Physicians
- Endorsed by the Healthcare Commission
National Comparative Audit of the use of Platelets

Why was this audit necessary?

- Sustained high demand for platelets (215,000/year in the UK)
- Significant cost (£48 million/year)
- Risks of blood component therapy
- The need to ensure appropriate use
- No previous national audits of platelet use
What were the audit aims & objectives?

• Aims and Objectives
  – Evaluate clinical practice using audit standards drawn, where possible, from the BCSH guidelines for the use of platelet transfusions (2003)
  – Compare platelet transfusion practice of individual hospitals with national practice
  – Identify areas of poor practice and encourage better practice
Methodology: Dataset

- Individual audit questionnaires were designed for patients transfused in 4 clinical categories
- Audit tool piloted in 14 hospitals during March/April 2006
- Web based electronic data tool designed and piloted in May 2006
- Online data collection for the main audit was carried out between June - September 2006
National Comparative Audit of the use of Platelets

Participation

We invited

- 279 NHS hospitals
- 74 Independent hospitals

Who took part

- 182 (65%) NHS hospitals sent information
- 5 (7%) Independent hospitals sent information

Number of transfusions audited

- Nationally = 4421
- North West RTC = 742
Methodology – the audit sample

Data collected for 40 consecutive platelet transfusion episodes, with a target sample of:

- 15 in haematology patients
- 10 in ITU (critical care) patients
- 10 in cardiac patients
- 5 in any other group of patients – ‘miscellaneous’ category

- All patient ages were eligible
National Comparative Audit of the use of Platelets

The Audit Results

- 4,421 transfusions audited (>89% of the patients in each clinical category were from hospitals in England)
- Reason for transfusion found for 93%
- 57% were prophylactic transfusions in the absence of bleeding (in line with previous data)
- No platelet count before transfusion in 29%
2,125 cases from 174 hospitals, median 13/site

- 55% received platelets for prophylaxis
- 26% had bleeding
- 12% were given prior to invasive procedure
- 7% - no reason for platelet transfusion was stated
Use of platelets in haematology

- **Standard**: Threshold for prophylactic transfusion is a platelet count $\leq 10 \times 10^9/L$, or $< 20 \times 10^9/L$ if sepsis (on i.v. antibiotics or antifungal therapy), APML or abnormal coagulation (BCSH, 2003)
Patients who received platelets for prophylaxis (without sepsis, APML or abnormal coagulation), and had a pre-transfusion platelet count of <10 x 10^9/L.
Patients who received platelets for prophylaxis (with sepsis, APML or abnormal coagulation), and had a pre-transfusion platelet count of <20 x 10^9/L
National Comparative Audit of the use of Platelets

Use of platelets in haematology

**Standard:** Platelet transfusion is not necessary for bone marrow biopsy (BCSH, 2003)

**Practice:** Of 45 patients undergoing bone marrow biopsy, *37 (82%) unnecessarily* received prophylactic platelet transfusion (median pre-transfusion platelet count $13 \times 10^9/L$)

<table>
<thead>
<tr>
<th>Number of patients in hospitals in North West RTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N'nal</td>
</tr>
<tr>
<td>37</td>
</tr>
</tbody>
</table>
Standard: If a platelet transfusion is given to raise platelet count before an invasive procedure:

- pre-transfusion count should be <50 x 10^9/L, and
- post-transfusion count should be checked before the procedure (BCSH, 2003)
National Comparative Audit of the use of Platelets
Use of platelets in haematology

% Patients given a platelet transfusion prior to an invasive procedure when their platelet count was <50 x 10^9/L

Hospitals

National Comparative Audit of Blood Transfusion
National Blood Service
National Comparative Audit of the use of Platelets
Use of platelets in haematology

Post transfusion, pre-procedure platelet count

% Patients having a post-transfusion platelet count before the procedure

Hospitals

National Comparative Audit of Blood Transfusion
National Blood Service
361 cases from 39 hospitals, median 10/site

- 87% involved cardiopulmonary bypass
- 47% primary CABG; 6% second or subsequent CABG; 27% AVR
- The platelet transfusion was given on the day of the procedure in 78% of those receiving platelets
National Comparative Audit of the use of Platelets

Use of platelets in cardiac surgery

**Standard:** For procedures involving bypass, platelets should be transfused only if there is uncontrolled, non-surgical, bleeding (BCSH, 2003)

**Practice:** Nationally, 59% of transfusions used to control bleeding

% Patients given platelets only if there is uncontrolled, non-surgical bleeding
National Comparative Audit of the use of Platelets
Use of platelets in cardiac surgery

Standard: In patients undergoing cardiopulmonary bypass, platelet count should be checked before transfusion (BCSH, 2003)
Practice: Pre-transfusion platelet count checked in 254/303 (84%) cases
Pre-transfusion platelet count for non-CPB was checked in (38/46) 83%
912 cases from 153 hospitals, median 6/site

- 92% were adults
- reason for admission to ITU (critical care):
  - post-operative complications (39%)
  - sepsis (27%)
  - respiratory failure 17%
  - trauma (8%)
National Comparative Audit of the use of Platelets
Use of platelets in ITU (critical care)

**Standard:** Routine prophylactic platelet transfusion should not be given unless the pre-transfusion count is $<30 \times 10^9/L$.

**Practice:** Excluding those patients with bleeding or a planned invasive procedure, 97/236 (41%) had a pre-transfusion platelet count of $<30 \times 10^9/L$.

% Patients with a pre-transfusion platelet count of $<30 \times 10^9/L$, excluding patients with bleeding or a planned invasive procedure

National Comparative Audit of Blood Transfusion
National Blood Service
National Comparative Audit of the use of Platelets
Use of platelets in ITU (critical care)

**Standard:** Where platelets given to raise count for an invasive procedure, the pre-transfusion count should be $<50 \times 10^9$/L, and the post-transfusion platelet count should be checked (BCSH, 2003)

**Practice:** (94/161) 58% of patients had a pre-transfusion platelet count $<50 \times 10^9$/L (i.e. complied).
National Comparative Audit of the use of Platelets
Use of platelets in ITU (critical care)

Practice: (153/165) 93% had a post-transfusion platelet count checked (i.e. complied).
National Comparative Audit of the use of Platelets
Use of platelets in Miscellaneous category

1023 cases from 164 hospitals, median 5/site

- 84% were adults
- type of patient:
  - medical (57%)
  - surgical (35%)
  - other e.g. accident & emergency, neonatal (8%)
National Comparative Audit of the use of Platelets
Use of platelets in Miscellaneous category

Standard: The threshold for routine prophylactic transfusion in medical patients should be \( \leq 10 \times 10^9/L \) (BCSH, 2003)

Practice: (54/161) 34% of medical patients who received prophylactic platelets (in the absence of bleeding, abnormal clotting or a planned invasive procedure) had a pre-transfusion platelet count of <10 \( \times 10^9/L \)

% Medical patients who received prophylactic platelets in the absence of bleeding, abnormal clotting or a planned invasive procedure, having a pre-transfusion platelet count of \(<10 \times 10^9/L\)
National Comparative Audit of the use of Platelets
Use of platelets in Miscellaneous category

**Standard:** Where platelets given to raise count for an invasive procedure, the pre-transfusion count should be $<50 \times 10^9/L$, and the post-transfusion platelet count should be checked. (BCSH, 2003)

**Practice:** (63/130) 48% of cases in this category had a pre-transfusion platelet count $<50 \times 10^9/L$ i.e. complied.

% of cases in this category who had a pre-transfusion platelet count $<50 \times 10^9/L$ (i.e. complied)
National Comparative Audit of the use of Platelets
Use of platelets in Miscellaneous category

(123/152) 81% had a post-transfusion platelet count checked i.e. complied.

% Patients having a post-transfusion platelet count checked

Hospitals
National Comparative Audit of the use of Platelets

Conclusions

- Significant lack of compliance with BCSH guidelines
- Majority of non-compliant transfusions in haematology patients were in the prophylactic category
- Appropriate use should reduce healthcare costs, improve platelet availability, and reduce risks to patients
National Comparative Audit of the use of Platelets

Recommendations

- Develop local guidelines for all clinical areas using platelet transfusion
- Develop more comprehensive national guidelines for cardiac surgery and critical care
- Regular (annual) local audits
- Education of all prescribers
- Consider point of care testing to help rationalise use of blood components in patients who are bleeding
- Further clinical trials are needed
- Re-audit in about 3 years
• **Project team:** Hafiz Qureshi, Derek Lowe, Phil Dobson, John Grant-Casey, Elaine Parris, David Dalton, Kathleen Hickling, Fiona Waller

• **Hospital staff who collected the audit data**
National Comparative Audit of the Use of Platelets

North West RTC

Prepared by
John Grant-Casey
Project Manager

October 2007