National Comparative Audit of the Use of Platelets

East Midland RTC

Prepared by
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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
National Comparative Audit of the use of Platelets

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
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Methodology

- **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
  - On line data collection for the main audit was carried out between June - September 2006
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   East Midlands RTC = 246
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
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 \(< 10 \times 10^9/L\), 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 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 10⁹/L
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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 x 10⁹/L)

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Standard: If a platelet transfusion is given to raise platelet count before an invasive procedure:

- pre-transfusion count should be $<50 \times 10^9$/L, and
- post-transfusion count should be checked before the procedure (BCSH, 2003)
% Patients given a platelet transfusion prior to an invasive procedure when their platelet count was <50 x 10^9/L
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Use of platelets in haematology

Post transfusion, pre-procedure platelet count

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

Hospitals
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
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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

![Diagram showing percentage of patients given platelets](image)

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Use of platelets in cardiac surgery
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

% Patients having platelet count checked before transfusion in cardiopulmonary bypass

Hospitals
Use of platelets in cardiac surgery

Pre-transfusion platelet count for non-CPB was checked in (38/46) 83%

Checking pre-transfusion platelet count

There were no cases in East Midlands

Hospitals

National Comparative Audit of Blood Transfusion
National Blood Service
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%)
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.
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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 x 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 x 10^9/L (i.e. complied).

% Patients with a pre-transfusion platelet count of <50 x 10^9/L
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Use of platelets in ITU (critical care)

Practice: (153/165) 93% had a post-transfusion platelet count checked (i.e. complied).

% Patients having a post-transfusion platelet count checked (i.e. complied)

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National A B C D E F G H I J K L
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%)
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Use of platelets in Miscellaneous category

Standard: The threshold for routine prophylactic transfusion in medical patients should be ≤10 x 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 x 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 x 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 x 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 x 10^9/L i.e. complied.

% cases in this category who had a pre-transfusion platelet count of <50 x 10^9/L
(123/152) **81%** had a post-transfusion platelet count checked i.e. complied.
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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
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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**
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