Education and Training to Improve Transfusion Safety

The Practical, Sensible Steps Taken to Help Achieve a Reduction in Red Blood Cell Usage

Brendan Branigan
Haemovigilance Officer
Beaumont Hospital and Bon Secours Hospital
Dublin, Ireland
"No single criterion"

"A transfusion is rarely indicated for Hb > 9g/dl and is almost always indicated for Hb < 6g/dl, (particularly when the anaemia is acute)"

"For many patients, a transfusion of a single unit may suffice"
Various medical specialities have their own transfusion guidelines, ie, Cardiology, Haematology, Oncology, Neurosurgery, Obstetrics and Intensive Care.

A practical, everyday transfusion guideline was needed.
Northern Ireland Audit

- 80% of patients who were transfused were admitted to hospital with anaemia – a significant number of whom could have been treated by simple means other than transfusion.

- 19% of patients transfused were judged to have an inappropriate transfusion – most of these patients were stable & healthy, both under and over 65 years who were transfused with their Hb between 7 and 10g/dl for no obvious reason.

- 29% of patients transfused were over-transfused.

Regional Appropriateness of Blood Transfusion Audit 2006: The Northern Ireland Transfusion Committee.
Written by Consultant Haematologist, Dr Kieran Morris and Consultant Anaesthetist, Dr Damien Carson, and endorsed by the Northern Ireland Regional Transfusion Committee
A review of transfusion episodes over 12 months using Northern Ireland RBC guidelines to identify inappropriate transfusion.

60 patients reviewed.

25% of patients were inappropriately transfused.

30% of patients were over-transfused.
Beaumont Hospital Audit

• Small sample of 20 patients, 10 male, 10 female, from various specialties.
• Initial decision to transfuse was correct in 18 cases-90%
• 3 cases went on to be over-transfused because Hb levels were not checked between transfusions.
Guidance at a glance!

- Covers nearly every scenario
- Practical
- Clear - National Geographic Magazine style
- Easy to read
- Well researched – 58 references
- The work is done
- Full colour Wall chart summary
- Both a guideline and an audit tool
<table>
<thead>
<tr>
<th>Stable Patients</th>
<th>Transfusion Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 65 years old with no cardiovascular or cerebrovascular problems.</td>
<td>Usually only consider transfusion when Hb &lt; 7g/dl</td>
</tr>
<tr>
<td>&gt; 65 years old with no cardiovascular or cerebrovascular problems.</td>
<td>Usually only consider transfusion when Hb &lt; 8g/dl</td>
</tr>
<tr>
<td>Known cardiovascular or cerebrovascular history (previous myocardial infarction, angina, hypertension, heart failure, peripheral vascular disease, pulmonary oedema).</td>
<td>Usually only consider transfusion when Hb &lt; 9g/dl</td>
</tr>
<tr>
<td>Patients with symptoms due to anaemia.</td>
<td>Transfusion Threshold</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Unstable patients bleeding heavily.</td>
<td>Consider transfusion when Hb &lt; 10g/dl</td>
</tr>
<tr>
<td>Impaired marrow function.</td>
<td>Consider transfusion when Hb &lt; 10g/dl</td>
</tr>
</tbody>
</table>

- Symptoms (dyspnoea, angina, palpitations, tachycardia, orthostatic hypotension, syncope) likely to be due to the anaemia.

**Note** – Tiredness alone is not an appropriate symptom for transfusion.

- Documented/obvious evidence of ongoing significant bleeding at time of transfusion causing symptoms as above or bleeding more than 500ml per hour and not stopping.

- Current or recent (within 3 months) marrow failure or chemotherapy or radiotherapy.
Definitions

**Inappropriate Transfusion**: Patient is transfused when Hb is higher than the recommended threshold.

**Over-transfusion**: Patient is transfusion to a Hb more than 2g/dl above recommended threshold.
What were the next steps?
How do you encourage staff to complete the e-learning courses?

My Choice - Chocolate!
Chocolate Egg Raffle

Bon Secours Hospital Dublin

If staff complete e-learning before Easter 2012 and they could win a very big Easter egg.

• 53 staff completed course before Easter.
• By end of year 225 staff had completed the mandatory course
• 106 staff also completed and extra course (Total nursing staff=270)
• Over 80% of nurses completed e-learning in 10 months
Steps Along the Way

- N.I. Guidelines recommended to Hospital Transfusion Committee (HTC)
- HTC wrote to Clinical Directors for opinions
- HTC approved N.I. Guidelines
- Letter and summary to all Consultants
- Incorporated into *Intern Induction*
- Presented at Medical and Surgical Grand Rounds
- Grand Rounds Presentations repeated
- Re-audit
- Incorporated into all nurse and doctor training
News and Announcements

05 November 2013 - BEAUMONT HOSPITAL MOBILITY MANAGEMENT SURVEY
05 November 2013 - PATHOLOGY NOTICE - CHANGE TO HEPARIN INDUCED THROMBOCYTOPENIA (HIT) SCREEN REQUIREMENTS
05 November 2013 - IRISH LUNG ALLIANCE - SERIES OF PUBLIC LECTURES
05 November 2013 - BLOOD TRANSFUSION EDUCATION - WED 6TH NOV
04 November 2013 - NO BHIS MONTHLY DOWNTIME THIS THURSDAY NIGHT - 7TH NOV
04 November 2013 - HR POLICIES - STAFF BRIEFING SESSION - TOMORROW TUE 5TH NOV
04 November 2013 - 2014 DIARIES - RESTRICTED NUMBERS BEING PURCHASED

(News Archive) (About News and Announcements)
BEAUMONT HOSPITAL BLOOD BANK

HOW CAN WE HELP YOU?

Welcome to the Intranet site for the Blood Transfusion Department of Beaumont Hospital which incorporates the Hospital Blood Bank and the Haemovigilance Office.

We provide a blood transfusion service to Beaumont Hospital and St. Francis Hospice.

The Blood Transfusion Department User Guide: This document provides information on the services provided by the Blood Transfusion Department, such as how to take a type and screen, specimen validity and how this is reported on the BHIS/PIPE.

Indications for the use of Blood Components & Products: This document provides information on the blood components and products supplied by the Blood Transfusion Department, indications for use of blood components and products and patients with special blood requirements.

Policies and Procedures for the Transfusion of Blood Components & Products: This document provides information on how to transfuse blood components and products, the management of a transfused patient, reporting of suspected transfusion reactions/events and traceability of blood components and products.

Paediatric Guidelines: This document provides information on paediatric guidelines from how to take a type & screen specimen to the management of a transfused paediatric patient.

These guidelines are the most up-to-date information in blood transfusion. These documents supersede any previous versions or editions.
QUICK LINKS

Red cell guidelines
CMV Negative & Irradiated Requirements
Reversal of Warfarin
Massive transfusion protocol
Maximum surgical blood ordering schedule (MSBOS)
Transfusion reaction notification form
ABO incompatible transplant recipient form
Patients on Purine Analogue drugs who require Irradiated blood components
Red Cell Transfusions 2010

Total 8796
Average 733 per month
Red Cell Transfusions 2011

Total 8798

Average 733 per month
Other Factors Which May Effect Red Blood Cell Usage

• Improved surgical techniques
• Pre-operative optimisation of Hb levels using iron therapy
• Blood stock management and exchange systems
• Stabbing & shootings
• More aggressive chemotherapy
• Decrease in Road Traffic Accidents
• Education of doctors and nurses based on evidence
Keys to Success

• Support from the 2 main professors in hospital, ie, Medical and Surgical
• Opportunity to persuade/convince the Consultants that the N.I. guidelines were useful
• Medical and Surgical Grand Rounds
• Intern Induction-the Consultants of the future!!!
• Minimal paper printing, maximal I.T. usage
Following our audits and adoption of the N.I. Guidelines, we revised our prescription form to include patient’s body weight. Our recommendations were also backed-up by BCSH guidelines on avoiding TACO*, ie, consider body weight, single RBC transfusion & monitor Hb levels.

*(BCSH) Guideline on the Administration of Blood Components Addendum, August 2012*
Important Points:

• We never refuse blood on request
• Doctors are assured that extra blood will be available if necessary
• Prescribing remains the prerogative of the doctor
• We discourage *double ordering* and *double prescribing*
• Inform doctors about the varying volumes of Red Blood Cell bags
Audits Repeated

October/November 2012
- 22 Red Cell transfusions
- Patients from various medical & surgical specialties
- No cases of inappropriate transfusion found
- One possible case of over-transfusion found

May 2013
- 20 Red Cells transfusions.
- 10 male and 10 female from various specialties.
- No cases of inappropriate transfusion found.
- No cases of over-transfusion were found.
Red Cell Transfusions 2012

- Total 7894
- -10.25%
- Average 658 per month
RED CELL TRANSFUSIONS 2013

Total 7,156

Average 596 per month
No Definite Association!

Since introducing the Northern Ireland Guidelines into Beaumont Hospital, Red Blood Cell usage was reduced by 18.65%.

Average use is 596 bags per month.
# Hospital Admissions 2010-2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>85,847</td>
</tr>
<tr>
<td>2011</td>
<td>89,176</td>
</tr>
<tr>
<td>2012</td>
<td>99,011</td>
</tr>
<tr>
<td>2013</td>
<td>100,585</td>
</tr>
</tbody>
</table>

Overall increase of **11.7%**
Based on 2012 Figures....

18.6% reduction at Beaumont Hospital represented a reduction of 1.2% of the IBTS annual issue of Red Cells

Source: Irish Blood Transfusion Service Annual report 2012

Cost to Beaumont Hospital has been reduced by at least €400,000 in 1 year.
Conclusion

• Reduced *inappropriate transfusions*
• Reduced *over-transfusion*
• Improved patient safety
• Improved access to research-based transfusion guidelines for medical staff
• Empowered doctors and nurses with knowledge about safer transfusion practice
• Reduced expenditure

We are indebted to the authors/contributors of *Better Use of Blood In Northern Ireland—Guidelines for Blood Transfusion Practice.* Published by GAIN.