

# Education and Training to Improve Transfusion Safety

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

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Beaumont Hospital and Bon Secours Hospital  
Dublin, Ireland

**A GUIDELINE FOR TRANSFUSION  
OF  
RED BLOOD CELLS  
IN SURGICAL PATIENTS**

**Issued by the National Blood Users Group**

**January 2001**

**“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.

BETTER USE  
OF BLOOD  
IN NORTHERN  
IRELAND

**Guidelines for Blood  
Transfusion Practice**

March 2009

Written by Consultant  
Haematologist, Dr  
Kieran Morris and  
Consultant  
Anaesthetist, Dr  
Damien Carson, and  
endorsed by the  
Northern Ireland  
Regional Transfusion  
Committee

# St Luke's Hospital, Kilkenny Audit

- 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**

Sabine N, Whitney E. An Audit of Transfusion Practices in the Anaemic Patient.

# **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.

## Guidelines for Red Cell Transfusion (Adults)

Wall Chart

- Always diagnose the cause of anaemia
- Treat reversible causes of anaemia

Stable Patients	Transfusion Threshold
< 65 years old with no cardiovascular or cerebrovascular problems.	Usually only consider transfusion when Hb < 7g/dl
> 65 years old with no cardiovascular or cerebrovascular problems.	Usually only consider transfusion when Hb < 8g/dl
Known cardiovascular or cerebrovascular history (previous myocardial infarction, angina, hypertension, heart failure, peripheral vascular disease pulmonary oedema).	Usually only consider transfusion when Hb < 9g/dl

Patients with symptoms due to anaemia Unstable patients bleeding heavily Impaired marrow function	Transfusion Threshold
Symptoms (dyspnoea, angina, palpitations, tachycardia, orthostatic hypotension, syncope) likely to be due to the anaemia.	Consider transfusion when Hb < 10g/dl
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.	Consider transfusion when Hb < 10g/dl
Current or recent (within 3 months) marrow failure or chemotherapy or radiotherapy.	Consider transfusion when Hb < 10g/dl

Patients should only be transfused to a target of 2.0g/dl haemoglobin in excess of the chosen threshold for transfusion above.  
Consider patient's estimated blood volume and any ongoing bleeding.

# 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



Stable Patients	Transfusion Threshold
< 65 years old with no cardiovascular or cerebrovascular problems.	Usually only consider transfusion when Hb < 7g/dl
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Known cardiovascular or cerebrovascular history (previous myocardial infarction, angina, hypertension, heart failure, peripheral vascular disease, pulmonary oedema).	Usually only consider transfusion when Hb < 9g/dl

<b>Patients with symptoms due to anaemia.</b> <b>Unstable patients bleeding heavily.</b> <b>Impaired marrow function.</b>	<b>Transfusion Threshold</b>
Symptoms (dyspnoea, angina, palpitations, tachycardia, orthostatic hypotension, syncope) likely to be due to the anaemia.	Consider transfusion when Hb < 10g/dl
Note – Tiredness alone is not an appropriate symptom for transfusion.	
Documented/obvious evidence of on-going significant bleeding at time of transfusion causing symptoms as above or bleeding more than 500ml per hour and not stopping.	Consider transfusion when Hb < 10g/dl
Current or recent (within 3 months) marrow failure or chemotherapy or radiotherapy.	Consider transfusion when Hb < 10g/dl

# **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



## Beaumont Hospital

### Document Management System

Search the DMS



Advanced search

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#### Select a Department

Select Department

#### Schedules and lists

- Beaumont Email (Outlook)
- Bleep List (Searchable)
- Beaumont Internet and email Access application form
- Beaumont - Quick Reference Telephone Directory (updated May 2013)
- Beaumont Hospital HIQA Report from July 2013 unannounced visit
- Clinical Care Programmes
- Cardiac Arrest System E-Learning Presentation
- CPR Training Dates (Aug to Dec 2013)
- DECT Phone Directory 2013
- Early Warning Score - ELearning Programme

### 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

[\(News Archive\)](#) [\(About News and Announcements\)](#)

#### Nursing Information

- 2013 Nursing Education Programme
- Nurse Prescribing
- Clinical learning Opportunities for Student Nurses
- SOP's for Student Nurses

#### Radiology/PACS Information

- RCR Guidelines for ordering Radiology Exams
- Details of Hospitals using NIMIS PACS (as of June 2013)
- What to do in the event that RIS/PACS is down out-of-hours
- RIS/PACS training days for 2013

#### Policies/Guidelines

- Corporate Policies (now available in Q-Pulse)
- Laboratory User Guides
- Governance & Accountability Structures

#### Pharmacy Documents

- Pharmacy Policies (now available on

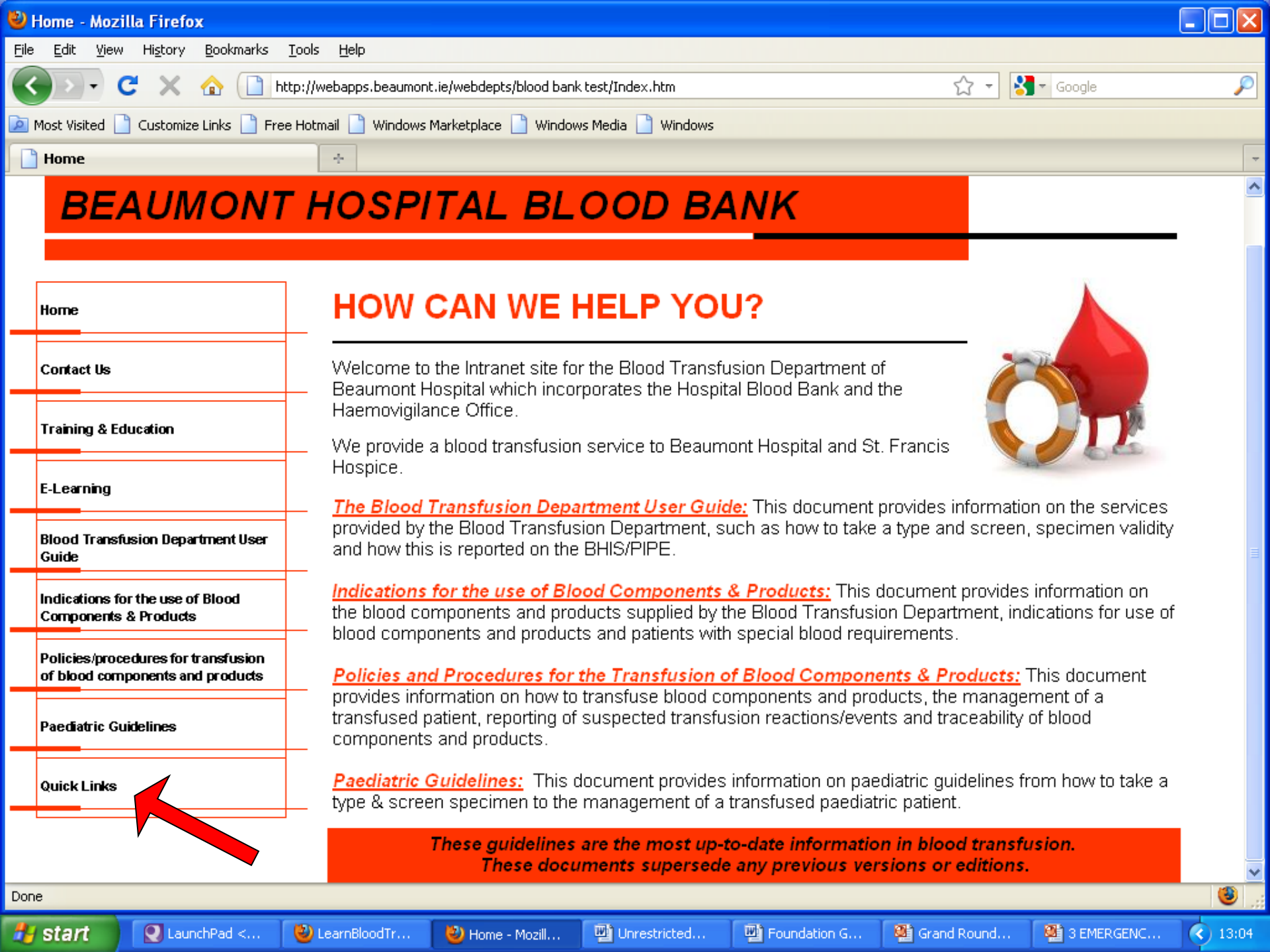
#### Internal Links

[Antibiotic Guidelines](#)  
[Acquired Brain Injury Service](#)  
[Beaumont Hospital Foundation](#)  
[Beaumont Hospital Ethics \(Medical Research\) Committee](#)  
[Blood Transfusion](#)  
[Finance Department](#)  
[Fire Safety Training](#)  
[Hand Hygiene Training](#)  
[HR @beaumont](#)  
[Infection Prevention & Control](#)  
[IT Training](#)  
[Learning & Development](#)  
[Legionella Awareness](#)  
[Pain Management Service](#)  
[Palliative Care Service](#)  
[RCSI Library](#)  
[Staff Counselling Service](#)  
[Tissue Viability Service](#)  
[Wellness@Work](#)

#### External Links

[British National Formulary \(BNF\)](#)  
[Eircom Phone Directory](#)  
[EMC Medicines Guides](#)  
[Hospice Friendly Hospitals](#)  
[Medusa IV Guide](#)





# 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.***



# BEAUMONT HOSPITAL BLOOD BANK



Home

Contact Us

Training & Education

E-Learning

Blood Transfusion Department User Guide

Indications for the use of Blood Components & Products

Policies/procedures for transfusion of blood components and products

Paediatric Guidelines

Quick Links

## QUICK LINKS

[Red cell guidelines](#)

[CMV Negative & Irradiated Requirements](#)

[Reversal of Warfarin](#)

[Massive transfusion protocol](#)

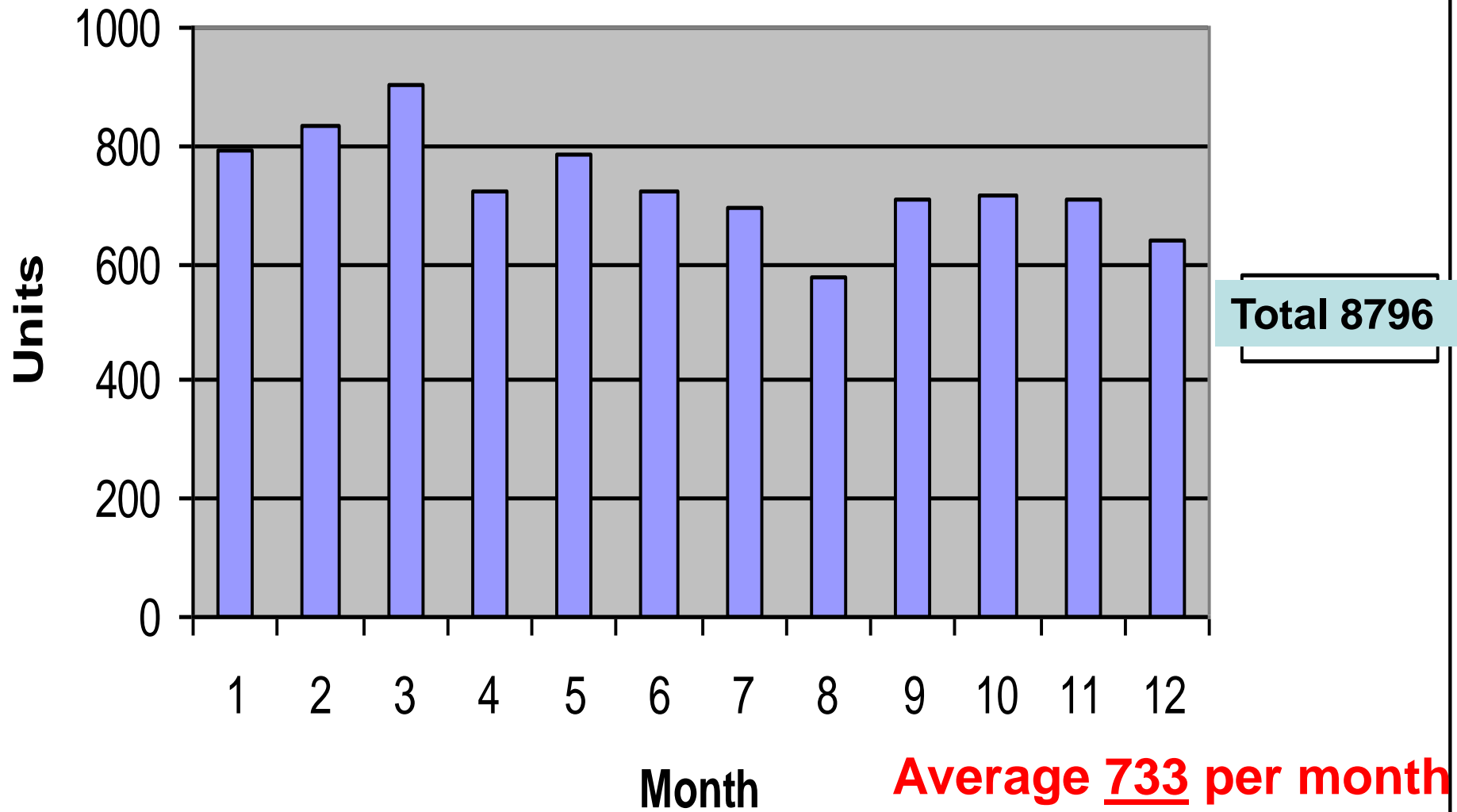
[Maximum surgical blood ordering schedule \(MSBOS\)](#)

[Transfusion reaction notification form](#)

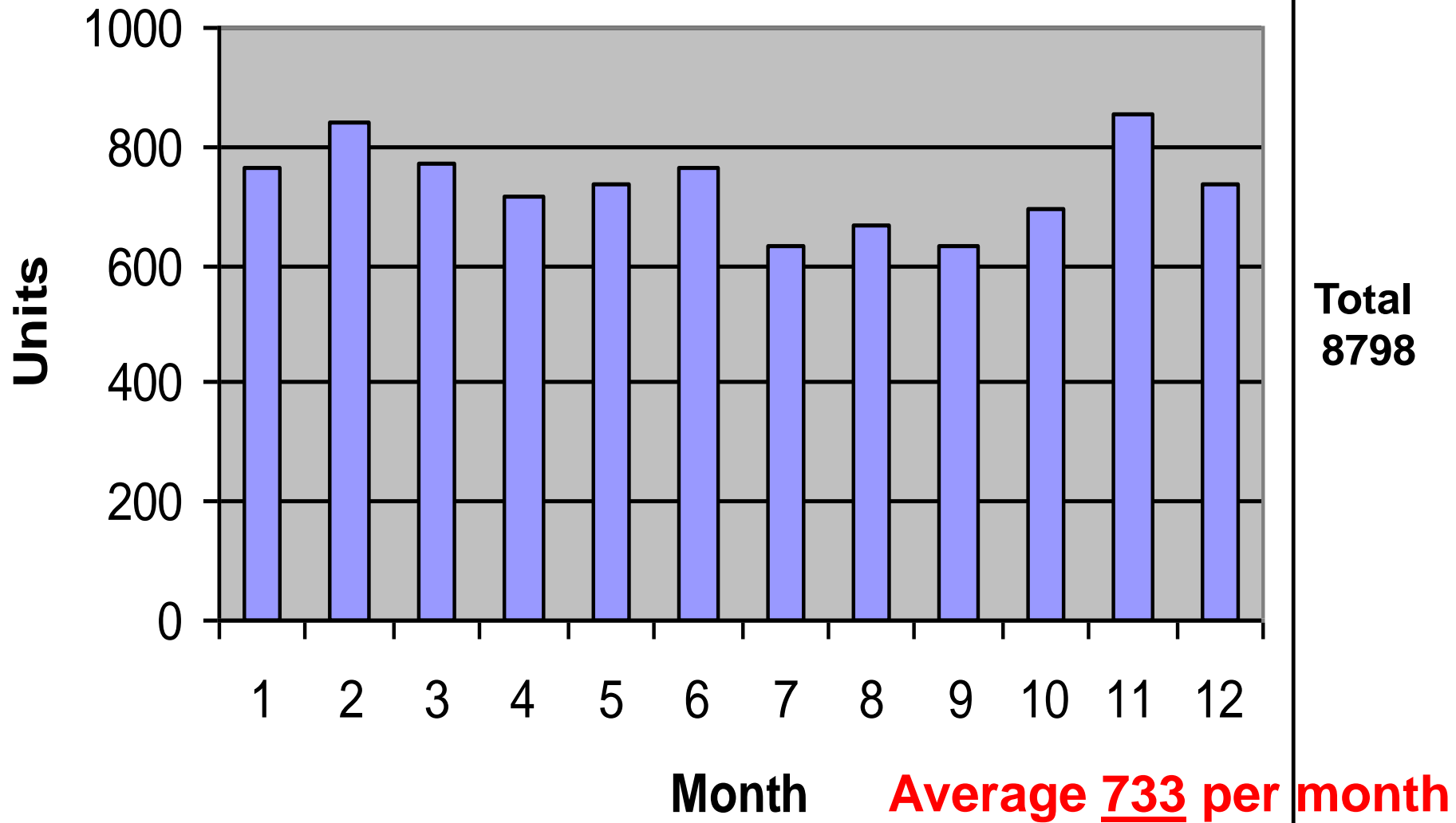
[ABO incompatible transplant recipient form.](#)

[Patients on Purine Analogue drugs who require Irradiated blood components](#)

# Red Cell Transfusions 2010



# Red Cell Transfusions 2011



# **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

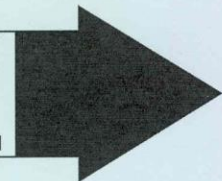


# BEAUMONT HOSPITAL / ST. FRANCIS HOSPICE

## BLOOD COMPONENT/PRODUCT PRESCRIPTION AND TRANSFUSION RECORD



**NB:** THESE DETAILS **MUST** BE COMPLETED BY PRESCRIBING DOCTOR BEFORE WRITING PRESCRIPTION



Use Addressograph Label or Print Details

**PATIENT'S DETAILS**

FULL NAME \_\_\_\_\_

DATE OF BIRTH \_\_\_\_\_

HISTORY/PATIENT NUMBER \_\_\_\_\_

- Adhere to Beaumont Hospital Transfusion Guidelines.
- Prescription is valid for 48 hours only.
- For children, prescribe in mls, based on child's weight
- Do not transfuse unless all questions on the prescription are answered by a doctor

**ALL QUESTIONS MUST BE ANSWERED**

TIME	DATE	PRE-TRANSFUSION LAB RESULTS	NO OF UNITS/ DOSE	RATE PER UNIT	SPECIAL REQUIREMENTS Please tick appropriate box
RED CELLS	<input type="checkbox"/>	Hb			Needs CMV negative?
PLATELETS	<input type="checkbox"/>	Plt Count			Yes <input type="checkbox"/> No <input type="checkbox"/>
SD PLASMA	<input type="checkbox"/>				Needs Irradiated Components?
OTHER	<input type="checkbox"/>				Yes <input type="checkbox"/> No <input type="checkbox"/>
Does patient need prophylactic drugs (eg. frusemide)? Yes <input type="checkbox"/> No <input type="checkbox"/> (Prescribe in Drug Prescription and Administration Record)					
Reason for Transfusion:					<b>Patient's Weight</b>
Doctor's Signature		IMC No:	Doctor's Name in Print		Bleep No
					Weight: _____
					Date taken: _____

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Reason for Transfusion:					<b>Patient's Weight</b>
Doctor's Signature		IMC No:	Doctor's Name in Print		Bleep No
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					Date taken: _____

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Doctor's Signature		IMC No:	Doctor's Name in Print		Bleep No
					Weight: _____
					Date taken: _____

LAB355E

BTD-HVF-018 (1.3)
 Authorised by Hospital Transfusion Committee
Issue Date October 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

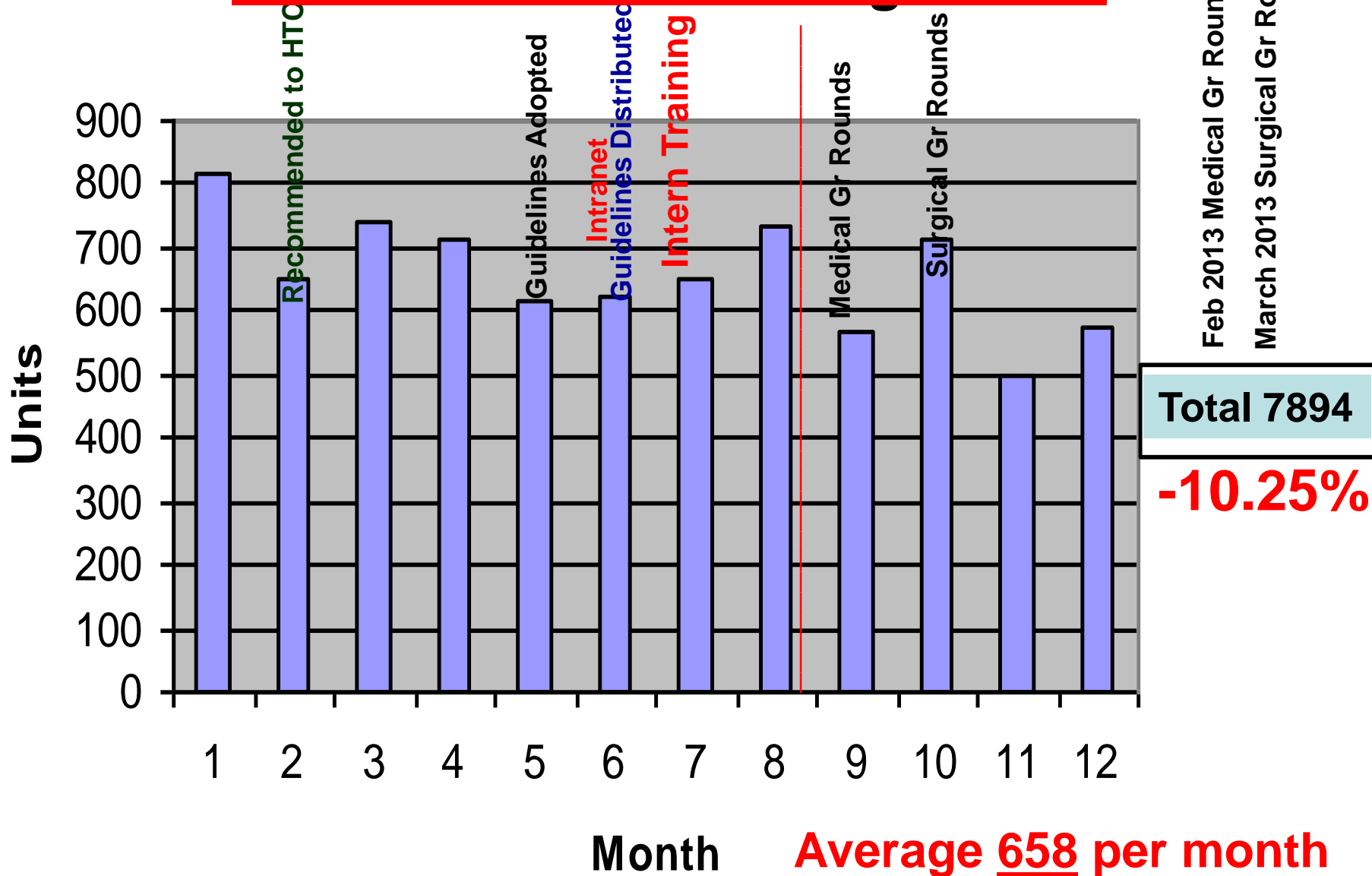
## October/November 2012

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

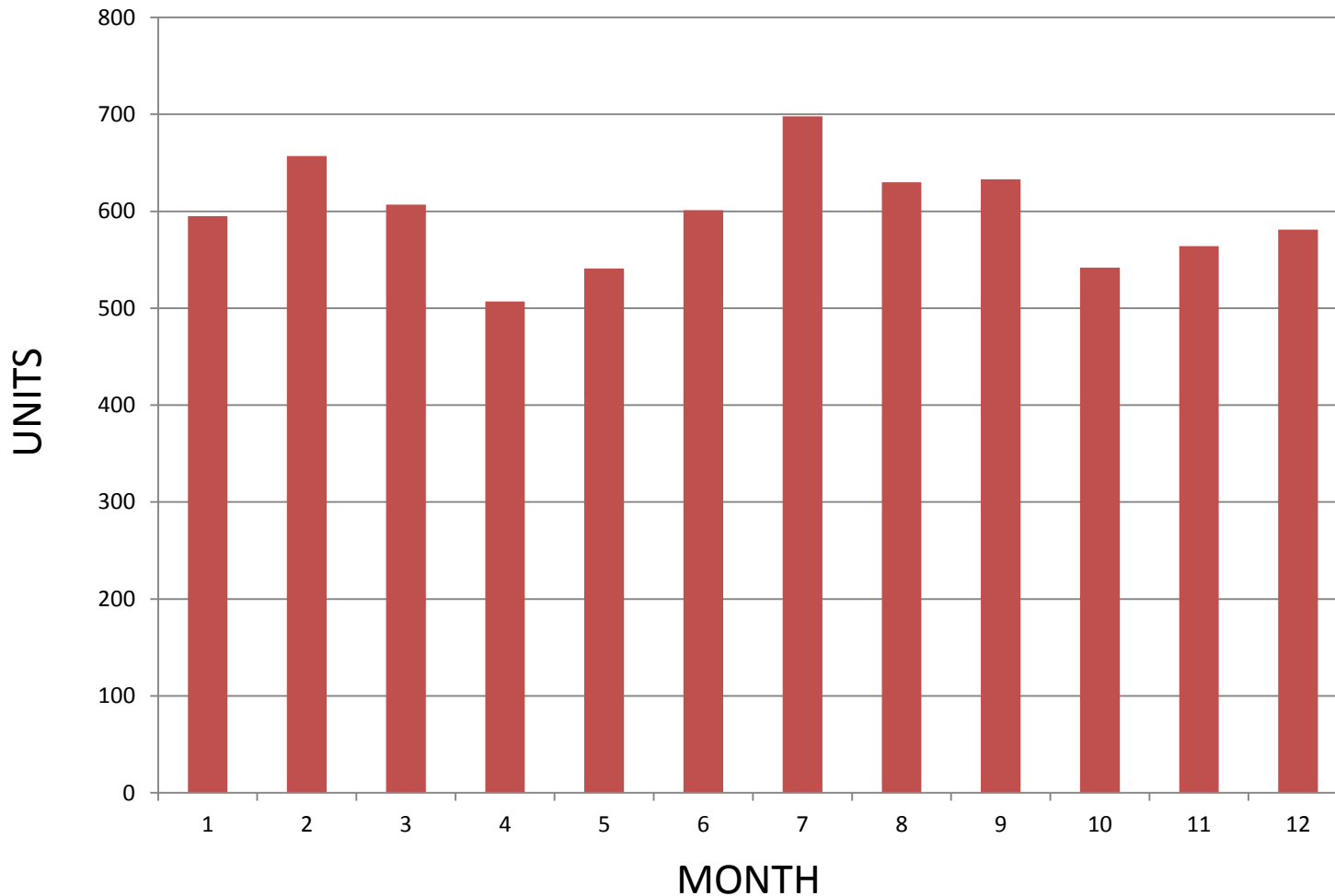
## May 2013

- 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



# 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 596 bags per month**

# Hospital Admissions 2010-2013

2010	85,847
2011	89,176
2012	99,011
2013	100,585

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.**