Single Unit Transfusion Project – Results from Kings College Hospital

October 2015

PBM Recommendation

'Transfuse one dose of blood component at a time e.g. one unit of red cells or platelets in non-bleeding patients and reassess the patient clinically and with a further blood count to determine if further transfusion is needed'

Evidence

Reference	Findings implementing restrictive/single unit policy
Yerrabothala et al (2014)	The total number of red blood cells transfused/1000 patient days decreased from 60.8 to 44.2 and the proportion of 2-unit transfusions decreased from 47% to 15%
Herbert *et al* 1999 **Carson *et al* 2011** **Villanueva 2013**	Multicentre randomised controlled trials demonstrate that a restrictive approach to RBC transfusion decreases transfusions without increasing mortality or adverse events
Berger et al (2012)	Reduced red cell usage by 25% with no evidence of more severe bleeding or reduction in survival in patients receiving intensive chemotherapy or stem cell transplantation.
Royal Oldham Hospital, UK (HTC verbal report, 2014)	Indicates a reduction in red cell usage of 10.4% last quarter (2.5% last year) and platelet usage by 16.8%

From: **Outcomes Using Lower vs Higher Hemoglobin Thresholds for Red Blood Cell Transfusion**

JAMA. 2013;309(1):83-84. doi:10.1001/jama.2012.50429

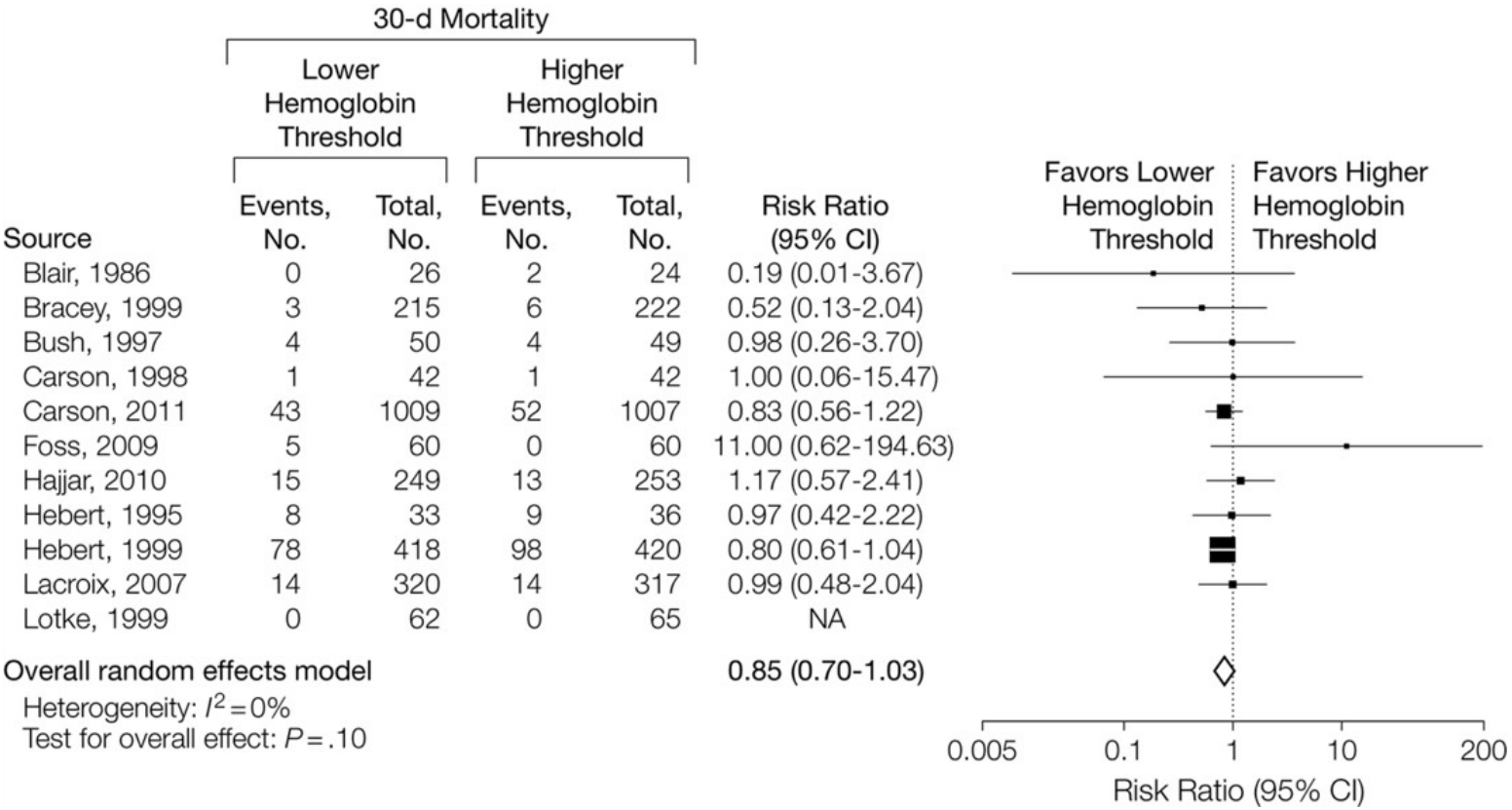


Figure Legend:

30-Day mortality was evaluated in 4975 patients included in 11 of 19 trials. Adapted from Analysis 3.2 in Carson JL, Carless PA, Hebert PC. Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion. Cochrane Database Syst Rev. 2012;4:CD002042. doi: 10.1002/14651858.CD002042.pub3

Review of Current Practice

National Comparative Audit for Blood Transfusion of Medical Use of Blood 2011

- Red cells transfused
  - 65% = 2 units
  - 15% = 3 units
  - 6% = 4 units
- Transfusion in cases with possible reversible anaemia (20%)
- Transfusion above the Hb threshold defined by the audit algorithm (29%)
- Over-transfusion (33%)
  - *Transfusion to more than 20g/L above threshold*

Overview of project

- Aim
  - To introduce and evaluate a single unit transfusion policy for general medical non-bleeding patients
- Definitions
  - Single unit = 1 unit given with a Hb check
  - Transfusion episode = number of units given in a 24 hour period

Pre-implementation

- Get approval from the Hospital Transfusion Team/Committee
- Assess the need
- Engage with consultants in the chosen clinical area

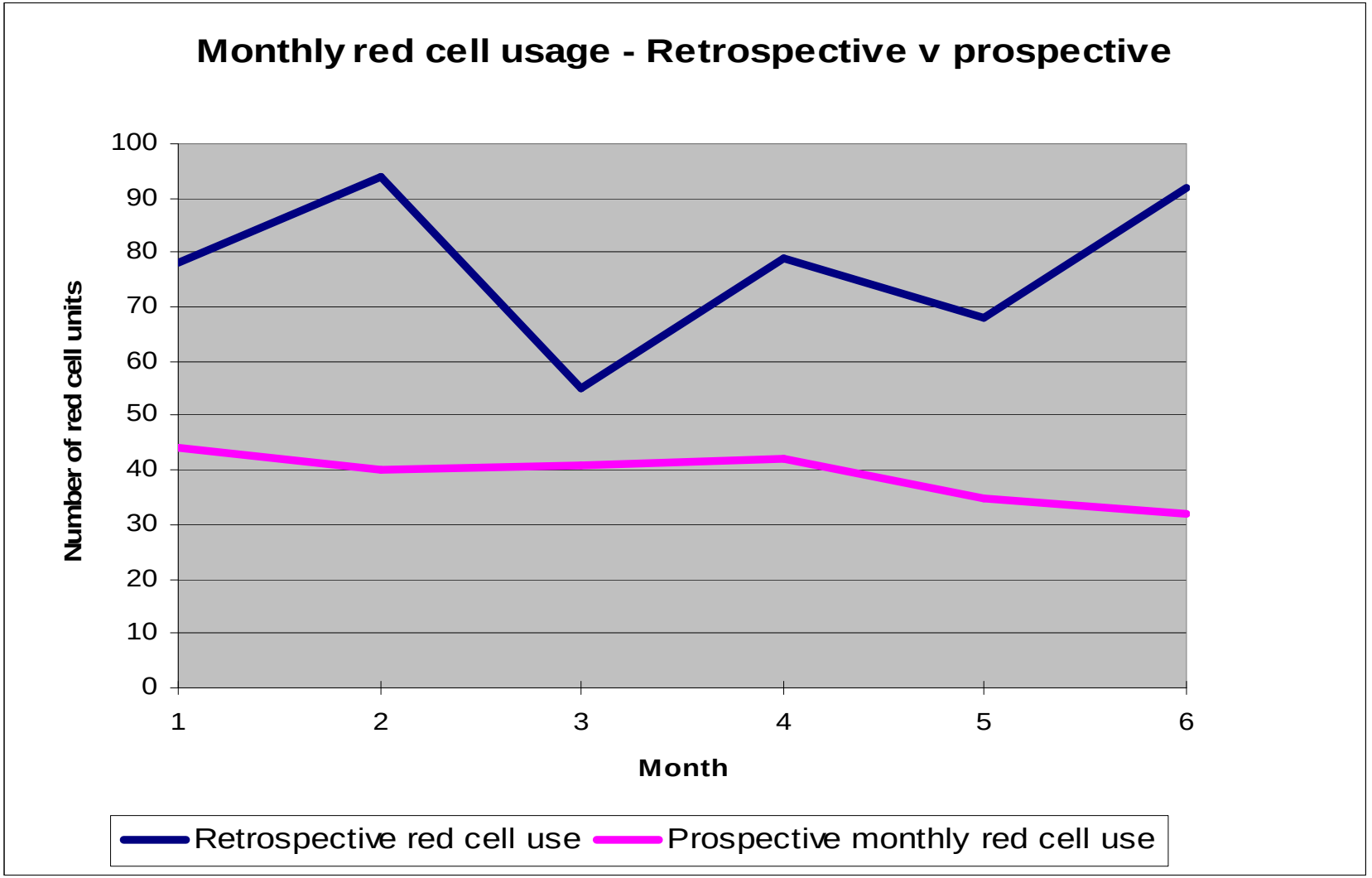
Implementation

- Collect data
- Train staff
- Develop/use resources
- Write a policy

Post implementation

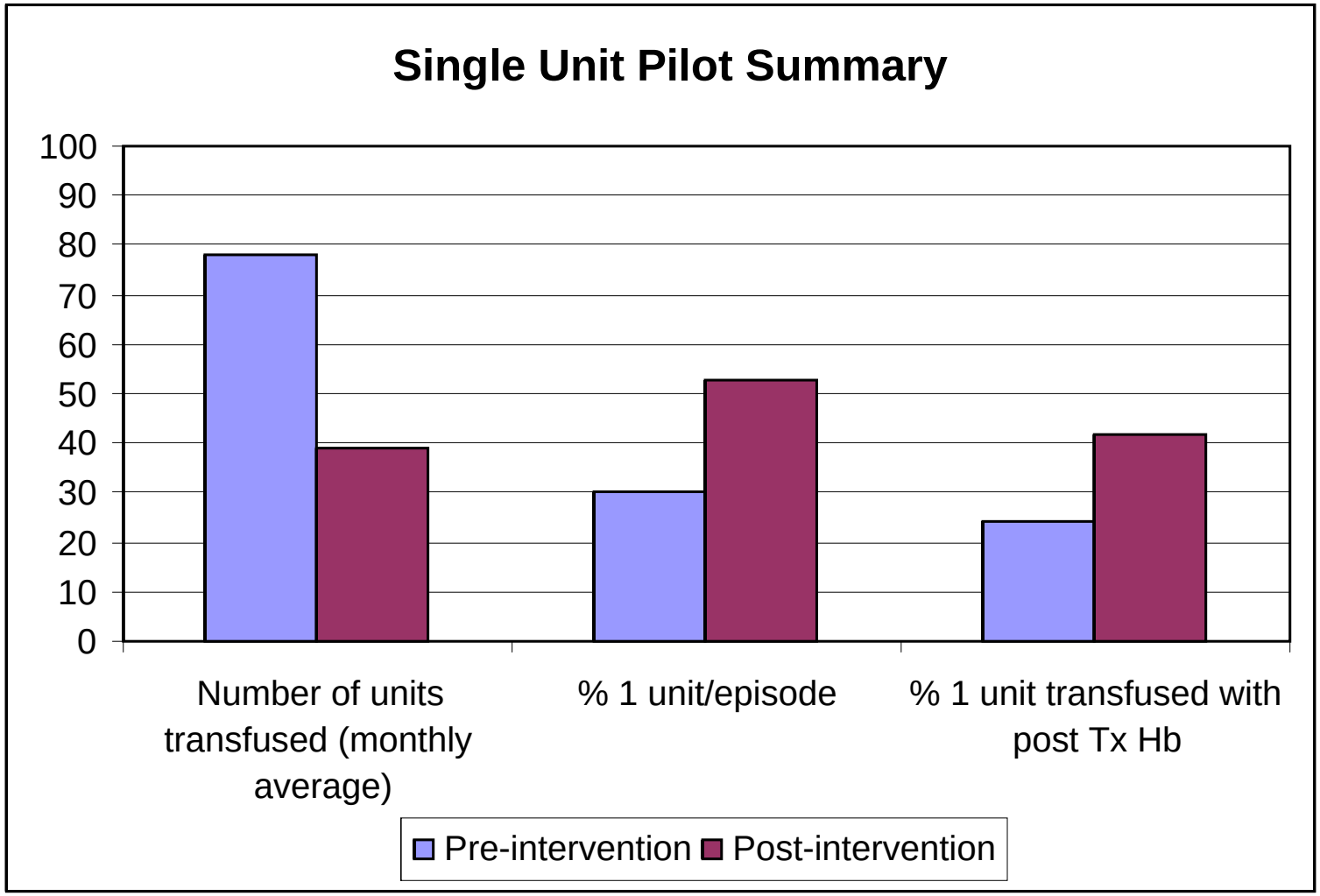
- Collect more data
- Report incidents of over/under transfusion
- Spread the word

Results


Monthly red cell usage - Retrospective v prospective
Number of red cell units
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
Month
Retrospective red cell use
Prospective monthly red cell use

Summary of Differences in Transfusion Data Pre and Post Single Unit Transfusion Policy			
Demographics	**Pre Single Unit Policy**	**Post Single Unit Policy**	
No of Patients Transfused	195	123	
Transfusion Details			
Outcomes			
	Pre Single Unit Policy	**Post Single Unit Policy**	**Difference in Two Independent Proportions**
Total Number of Units Transfused	466	234	–
Proportion of Single Unit Transfusions	0.30	0.53	P=<0.001 (0.15-0.30)
Proportion of 2 Unit Transfusions	0.65	0.43	P=<0.001 (0.14-0.29)
Proportion of 3 Unit Transfusions	0.05	0.04	NS
Mean Pre Transfusion Hb	75	73	NS
Mean Post Transfusion Hb	96	90	NS
Cost Difference			
Cost Savings Unit Reduction	£56,852	£28,182	-£28, 670

Results Summary

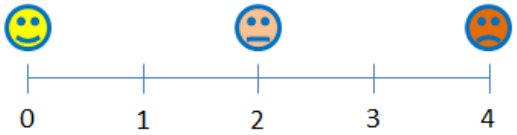


Further development and review

- Clinical review of notes
- More engagement from haematology registrars/consultants
- Patient assessment/evaluation of benefit

Patient Evaluation

Patient Blood Management – Symptomatic improvement assessment following non urgent red cell transfusion



Post transfusion assessment must be done at least XX hour after transfusion

UNIT 1 - PRE TRANSFUSION Date_____ Time_____
To be completed by doctor prescribing the red cell transfusion

Symptom	**Severity Score**
Fatigue	☐
Shortness of breath at rest	☐
Chest pain or heart palpitations	☐
Faint	☐

Name_____ **Contact number**_____

UNIT 1 - POST TRANSFUSION Date_____ Time_____
To be completed by the nurse/doctor assessing the patients

Symptom	**Severity Score**
Fatigue	☐
Shortness of breath at rest	☐
Chest pain or heart palpitations	☐
Faint	☐

Name_____ **Contact number**_____

UNIT 2 - PRE TRANSFUSION Date_____ Time_____
To be completed by doctor authorising the red cell transfusion

Symptom	**Severity Score**
Fatigue	☐
Shortness of breath at rest	☐
Chest pain or heart palpitations	☐
Faint	☐

Name_____ **Contact number**_____

UNIT 2 - POST TRANSFUSION Date_____ Time_____
To be completed by the nurse/doctor assessing the patients

Symptom	**Severity Score**
Fatigue	☐
Shortness of breath at rest	☐
Chest pain or heart palpitations	☐
Faint	☐

Name_____ **Contact number**_____

ONLY TRANSFUSE A THIRD UNIT IF PATIENT BLEEDING OR BEEN APPROVED BY A HAEMATOLOGIST

NOTE: Measurement of symptoms will be taken from the routine observations recorded on the Prescription chart. Please ensure this is completed.

Limitations

Things to consider

- Only a small proportion of Kings patients
- Did not tackle the high user areas – haematology etc
- Data not for the same time period

The work doesn’t stop here

- Patient Blood Manager for Trust
- Roll out single unit to other clinical areas
- Continuation of training
- Review of data after 12 months to establish if change sustainable

Available Resources

- Hospital and Science website
- Training slides
- Laboratory algorithm
- Example policy