

Single Unit Transfusions

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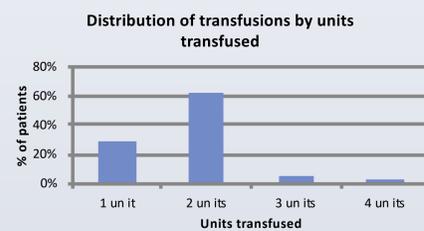
Introduction

Blood can be life saving but its administration is not without risk. UK transfusion related mortality and morbidity data from the 2013 Serious Hazards of Transfusion (SHOT) report is shown below.

Mortality/morbidity data 2013	Total	IBCT	ADU	ANTI-D	ATR	HTR	TRALI	TACO	TAD	UCT	PTP	Others
Death in which transfusion reaction was causal or contributory	22	1	5	0	0	1	1	12	0	1	1	0
Major morbidity probably or definitely attributed to transfusion reaction (imputability 2/3)	143	6	7	1	76	8	9	34	1	1	0	0
Minor or no morbidity as a result of transfusion reaction	1406	240	149	353	244	40	0	50	5	4	2	319
TOTAL	1571	247	161	354	320	49	10	96	6	6	3	319

Blood should only be given when it is needed.

An initial baseline audit of 400? transfusions showed that the majority of patients received a two unit transfusions



Analysis of two unit transfusions



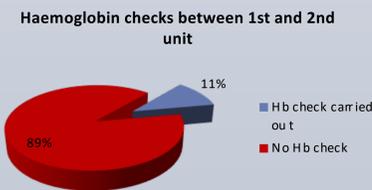
We then identified that 1 in 5 of these patients receiving a two unit transfusion were overtransfused* - they were given too much blood

*Overtransfusion – GAIN guideline defines as post transfusion haemoglobin raised more than 20g/l above the patients transfusion threshold

Overtransfusion is unintentional. Clinicians are generally unaware of the considerable range in the haemoglobin content (44g to 75g) between units of red cells. Also the circulation volume within patients is varied and compounds the variation of haemoglobin rise for each unit administered. Each unit of blood therefore raises a patients haemoglobin by an unknown quantity.

Only a haemoglobin check after each unit can identify the haemoglobin rise and correctly inform if additional blood is required.

We identified that only 11% of the patients who received a two unit transfusion had haemoglobin checks between the 1st and 2nd units



Better checking of the patients haemoglobin between units is the obvious first step to reduce overtransfusion and unnecessary exposure to blood.

Aim

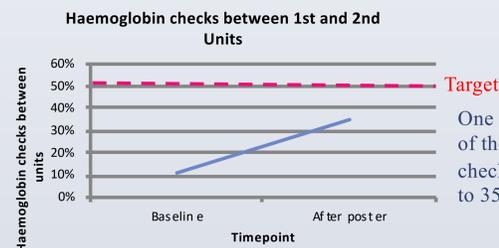
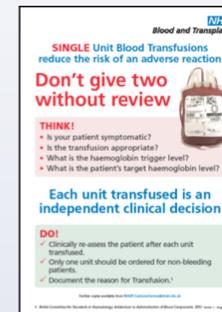
To increase the haemoglobin checks between the 1st and 2nd red cell transfusions to 50% by April 2015

Action 1

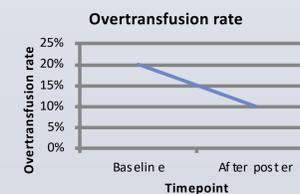
Action Measures

The first action measure was to educate clinical staff. Various education options were appraised and it was agreed to commence an education initiative based around The National Blood Service's "Don't give two without review" poster.

The poster was distributed to all wards and departments.



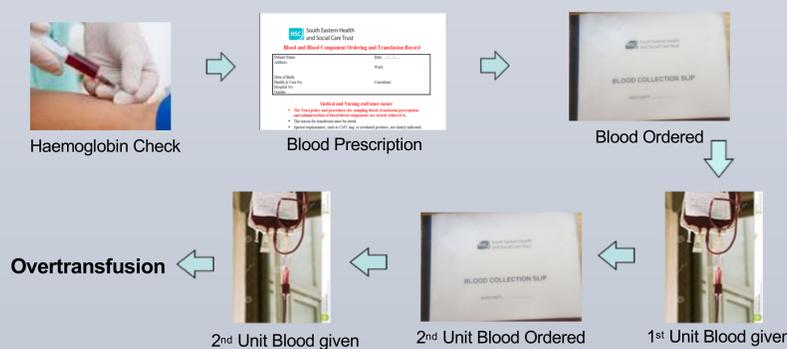
One month following the distribution of the posters, the haemoglobin checks between units had increased to 35%.



Also in this time period, the overtransfusion rate in two unit transfusions had halved to 10%.

Action 2

Further improvement was required. A review of the 2 unit transfusion process was undertaken

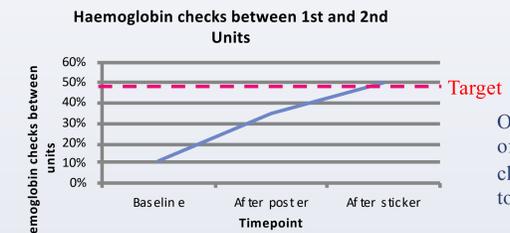


The previous education initiative (poster) was outside the transfusion process. The second initiative was targeted as a reminder within the process itself. A bright yellow sticker was developed and placed on both the front and inside page of all Blood Collection Books.

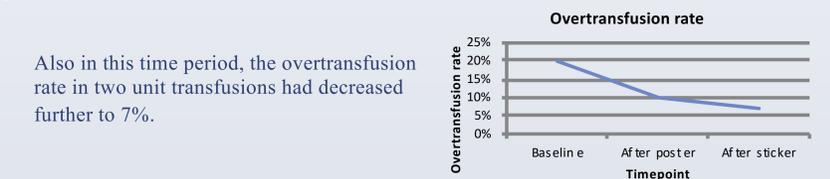


This was a high visibility reminder within the two unit transfusion process to prompt staff to check the haemoglobin between units whenever possible.

Results



One month following the distribution of the stickers, the haemoglobin checks between units had increased to 50% meeting the target set.



Also in this time period, the overtransfusion rate in two unit transfusions had decreased further to 7%.

The project was associated with a decrease in the use of blood

Month	Baseline July 2014	Month Following action measure 1	Month Following action measure 2
Red cells transfused (daily average)	17	14 -17%	14 -17%

If this trend continues this could result in a decrease of approximately 1000 units per year.

Future plans

- Transfusion policy is to be amended to incorporate checks
- Print run of future blood collection books to have check reminder pre-printed
- The team will assess the feasibility of adding sticker to the reverse of blood unit "luggage tags" to act as a further reminder within the transfusion process



Balance

We acknowledged that undertaking a haemoglobin check between 1st and 2nd units may result in additional workload for laboratory, clinical and support staff, which would need to be weighted against the gain for the patient. An initial review of laboratory workload does not indicate an increased workload.

Summary

There is a large variability of haemoglobin within a unit of blood and different circulation sizes in patients. This project identified that this variability frequently leads overtransfusion of blood. The project identified that two unit transfusions were the commonest administration and the majority of these took place without a haemoglobin check between units. The project succeeded with initiatives to improve the haemoglobin check between units and this was associated with less overtransfusion and lower blood use leading to an improvement in patient safety and financial savings.

Acknowledgements

UK Better Blood Transfusion Network.
Blood bank staff from the Ulster hospital.
Gail Moutray, Medical Directorate Office, Ulster hospital.