

Empowering Laboratory Staff to Improve Appropriate Use of Red Cells in Adults



Royal Derby Hospital
NHS Blood and Transplant

Project Report

Project Team:

Heather Clarke - Transfusion Laboratory Manager, Royal Derby Hospital

Katarina Kacinova - Transfusion Practitioner, Royal Derby Hospital

Aimee Burtenshaw - Transfusion Practitioner, Royal Derby Hospital

Sandra Dodds - Transfusion Practitioner, Royal Derby Hospital

Jo Shorthouse - PBM Practitioner, NHSBT Sheffield

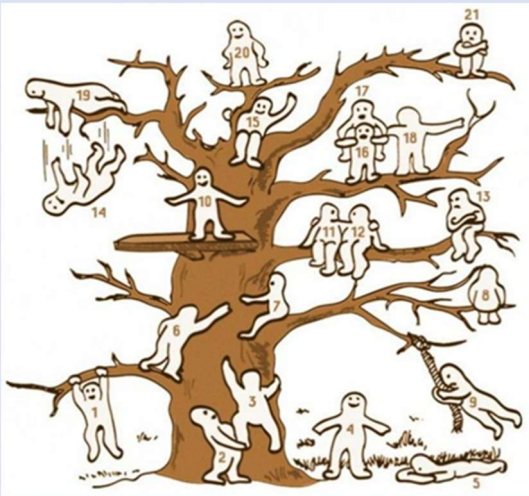
Executive Summary	<p>The Transfusion Team at the Royal Derby Hospital and NHS Blood and Transplant's Patient Blood Management (NHSBT PBM) Team worked in collaboration to implement an appropriate use/ single unit protocol within the Transfusion Laboratory and General Medical wards. Adoption of an appropriate use /single unit protocol results in compliance to national guidelines and recommendations to implement best evidence-based practice and lead to resource saving.</p> <p>Patient Blood Management initiatives are built around the key principle to optimise the care of patients who might need a transfusion. These initiatives involve a multidisciplinary approach to transfusion and alternatives which are evidence based.</p> <p>Two months baseline data was collected before a programme of education took place within the laboratory area.</p> <p>The intervention was to encourage laboratory staff, who receive requests for transfusion, to look at the reasons for the request, check relevant patient details/previous results and decide if the request was appropriate.</p> <p>The main focus was on the number of units requested for the transfusion episode and was the request appropriate.</p> <p>A laboratory algorithm was produced to guide laboratory staff in the decision-making process and the education programme aimed to increase overall knowledge, understanding and confidence of the laboratory staff to make these decisions and offer advice to the requesting clinician if required.</p> <p>The scope of the project was all General Medical wards and only stable, non-bleeding adult patients were included in the project.</p> <p>It was expected that this project would deliver an increase in single unit transfusions, a reduction in multiple unit transfusions and possibly decisions made where transfusion was not needed at all. Also, an increased confidence in laboratory staff to question inappropriate requests.</p> <p>This would lead to increased compliance with guidelines and savings in healthcare resources without a detrimental impact on patient care, length of stay and re-admission.</p>

<p>Introduction</p>	<p>In the past, it was commonly accepted practice that a transfusion of a single unit of red cells was either insufficient or unnecessary. Transfusion of two or more units became commonplace¹, with the result that some patients were over transfused and put at risk of associated complications such as Transfusion Associated Circulatory Overload (TACO).</p> <p>Appropriate use /single unit transfusion was introduced as a result of Patient Blood Management initiatives which aims to optimise the care of patients who might need a transfusion.</p> <p>It is now recognised that a restrictive transfusion practice is often associated with better clinical outcomes supporting the premise that single unit red cell transfusion in anaemic non-bleeding patients below the threshold for transfusion, will be sufficient to improve symptoms and achieve the restrictive target haemoglobin.</p> <p>Several multicentre randomised, controlled trials have demonstrated that a restrictive approach to red blood cell transfusion in non-bleeding adult patients decreases transfusions without increasing mortality or adverse events. Implementation of a single unit transfusion policy has been shown to reduce the number of transfusions performed and therefore, reduce the risk to the patient associated with allogeneic blood transfusion^{2 3 4 5}</p> <p>National Institute for Healthcare and Clinical Excellence (NICE) guidance⁶ and British Society for Haematology (BSH) guidelines⁷ both recommend clinical reassessment after each red cell unit transfused leading to the adoption of a single unit policy.</p> <p>This project focussed on the laboratory perspective of appropriate use. It aimed, through a programme of education to increase the overall knowledge, the understanding around appropriate transfusion and the confidence of laboratory staff to question possible inappropriate requests. This would enable them to recognise where single unit transfusion may be more appropriate if not already requested and offer advice to the clinician authorising the transfusion.</p>
----------------------------	---

Aims and Objectives	<p>The aims and objectives of this project were to:</p> <ul style="list-style-type: none"> • Implement an appropriate use /single unit protocol into Royal Derby Hospital • Invest in laboratory staff: Increase overall knowledge, understanding around appropriate transfusion in both lab and clinical areas • Encourage laboratory staff to look at the reasons for transfusion requests, check relevant patient results and increase their confidence to discuss an inappropriate request with the requester • Improve patient outcomes and reduce the number of inappropriate red cell transfusions • Improve compliance to NICE Blood Transfusion Quality Standard QS138: Standard 3 ⁸ • Improve compliance with Choosing Wisely campaigns in UK ⁹ <i>‘Why give two when one will do?’</i> • Reduce financial costs to the Trust
Scope	<p>The scope of the project was all General Medical wards including Medical Assessment Unit (MAU) for all red cell transfusions that occurred during monitoring and baseline periods. Any transfusions that occurred in A&E or other associated areas were excluded.</p>

Implement- ation Plan	Project Plan:		
	#	Activity and details	Person Responsible
	1	Trust transfusion policy – confirm appropriate use is included	TPs
	2	Present project at Hospital Transfusion Committee meeting	All
	3	Generate a list of Consultants working on General Medicine	TPs
	4	Baseline data collection (Aug-Sep18)	TPs
	5	Decide which resources are needed	All
	6	Create lab algorithm	All
	7	Create infographic	All
	8	Adapt the telephone request form for use during project	TPs
	9	Create self-assessment questionnaire for lab staff	All
	10	Develop training material for lab staff	All
	11	Make lab staff aware of the project and their role	All
	12	Train lab staff	All
	13	Include details in blood transfusion theory training?	TPs
	14	Implementation start date	All

	15	Develop and provide regular reports to Blood Bank Quality, Hospital Transfusion Team and Hospital Transfusion Committee meetings	All
	16	Post implementation data collection	TPs
	17	Data analysis	All
	18	Final report writing	All
	The project plan was managed by the above action log, which was tracked on a Gantt chart and reviewed and updated every 2 weeks.		
Data Collection and Process Measures	<p>Baseline data was used to show the level of improvement required and to engage and communicate to General Medical wards and other stakeholders.</p> <p>Only anonymised data was shared with NHSBT to support with data analysis.</p> <p>Below is the list of the data sets that were collected for two months baseline, for 3 months post implementation and for 2 months one-year post implementation.</p> <ul style="list-style-type: none">1) Patient demographic data<ul style="list-style-type: none">a) Hospital numberb) Namec) Date of Birth (only year or birth or age will be shared with NHSBT)d) Gender2) Sample numbers from laboratory system3) Consultant name4) Requester name5) Number of units requested6) Number of units issued7) Number of units transfused8) Number of requests referred to TP <p>Measurables:</p>		

	<p>Investment in laboratory staff: -</p> <ul style="list-style-type: none"> Staff self-assessment – pre and post education/workshops <p><i>Jelly Baby Tree Staff Self-assessment:</i></p> <p>The ‘Jelly Baby Tree’ was as a tool used to look at the reflective journey of laboratory staff before initial training, post training and post implementation. Staff were asked to pick which jelly baby they personally felt like at these points in the project and these choices were compared to, hopefully, see a positive increase in their chosen tree positions by each staff member.</p>  <ul style="list-style-type: none"> No. of requests for RBC transfusions (BB request form/telephone) No. of units requested No. of units issued No. of requests referred to TP Outcome of referral
<p>Benefits and Expected outcomes</p>	<ul style="list-style-type: none"> Improved patient care and safety The laboratory receives fewer requests for multiple unit transfusions The patient has fewer donor exposures due to reduced numbers of units transfused and therefore a reduced risk of adverse events. Laboratory staff feel more confident to question inappropriate red cell requests Laboratory staff are aware of their important role in the transfusion process

	<ul style="list-style-type: none"> Reduction in blood budget due to increased number of single unit and overall reduction in number of units transfused
Resources	<p>Below is the list of resources that were developed for the project. As the project progressed and new resources were needed, they were agreed and created at regular project group meetings.</p> <ul style="list-style-type: none"> Training package for laboratory staff “One at time is fine” badges – given out with training A5 flyers - single unit Info graphic- <i>treat the patient not the Hb</i> Laboratory algorithm Updated telephone request form Self-assessment form <p>Any new resources developed during this collaboration project were made available on the Hospital and Sciences NHSBT website to allow other hospitals to use.</p>
Funding	This project did not incur any costs.
Reporting Structure	<p>The project team met monthly to discuss progress and review Gantt chart and more frequently when required. NHSBT PBM Practitioner was available as agreed with the project team.</p> <p>The project team reported activity and progress to the Blood Bank Quality, Hospital Transfusion Team and Hospital Transfusion Committee meetings as deemed appropriate.</p> <p>NHSBT PBM Practitioner reported on progress monthly at PBM team meetings.</p>
Results	Data was collected for 2 months pre implementation, 3 months immediately post implementation and a further 2 months at 1 year post implementation – this was the number of units requested and issued, the number of single unit requests and the number of requests that

resulted in less units being transfused than were issued. Data was analysed and compared pre and post implementation. The staff self- assessment questionnaires were collated, and comparison compared graphically.

The 3 months post implementation results clearly show the positive effects of laboratory staff questioning inappropriate requests in both actual numbers of unit's being transfused (overall decrease) and an increase in the number of single unit transfusions being requested and transfused.

12 months post implementation:

- Increased % of single unit transfusions (Dec 19 = 45% Jan 20 = 47%)
- Increased % of single unit transfusions in areas/wards not included in the project
- Evidence of medical review taking place resulting in single unit transfusion (from data interrogation)
- Reduced transfusion requests
- Decrease in number of units being transfused

Staff self-assessments showed an increase in confidence to discuss/question inappropriate requests both after the training and 3 months post implementation

12 months post implementation:

The Transfusion Laboratory Senior Biomedical Scientist commented that; "questioning and discussion of possible inappropriate requests was now embedded into the culture of the laboratory. There is an increased confidence to question and discuss requests with the clinical staff and the overall response is positive and definitely increasing collaboration between the laboratory and the clinical areas

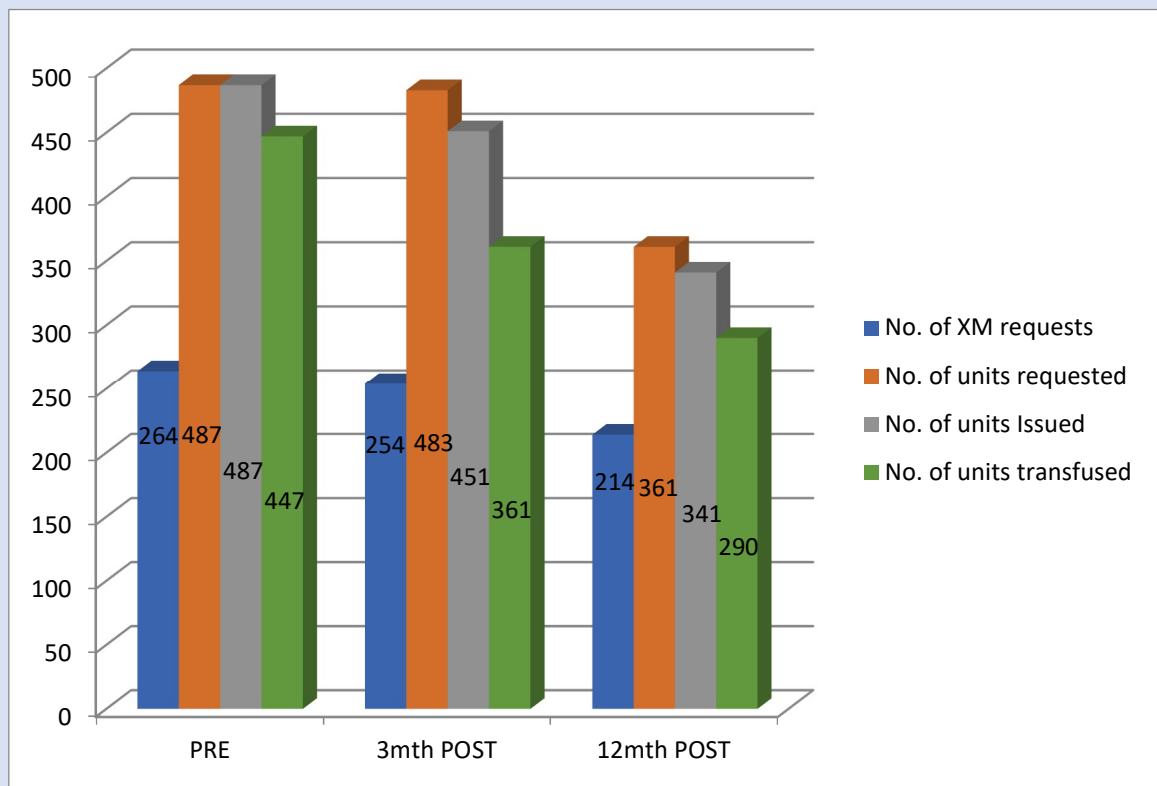
Pre-Implementation – no questioning taking place:

	No. of XM requests	No. of units requested	No. of units Issued	No. of single unit XM requests	% of single unit XM requests	No. of units transfused	No. of referrals to TP
AUG 2018	221	425	425	51	23	396	0
SEPT 2018	306	549	549	97	32	498	0

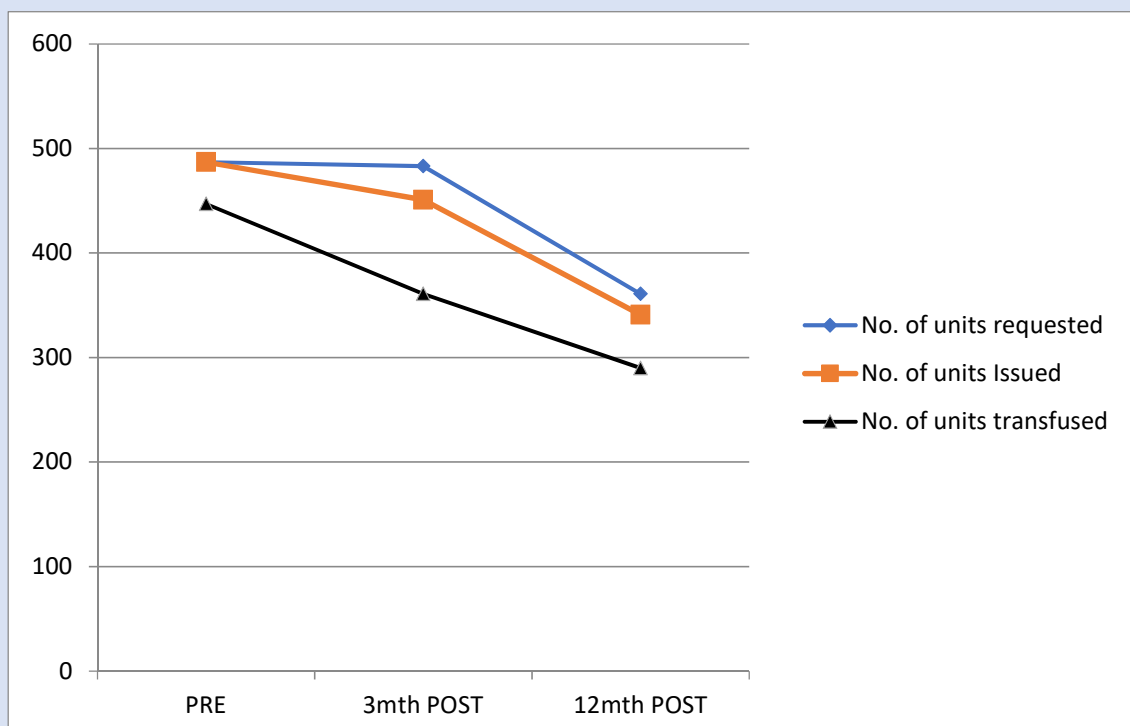
Post-Implementation – appropriate questioning taking place:

	No. of XM requests	No. of units requested	No. of units Issued	No. of single unit XM requests	% of single unit XM requests	No. of units transfused	No. of referrals to TP
JAN 2019	267	543	495	76	29	393	0
FEB 2019	226	432	404	70	31	318	0
MAR 2019	268	475	455	103	38	373	0
DEC 2019	207	339	325	93	45	282	0
JAN 2020	224	384	358	106	47	299	0

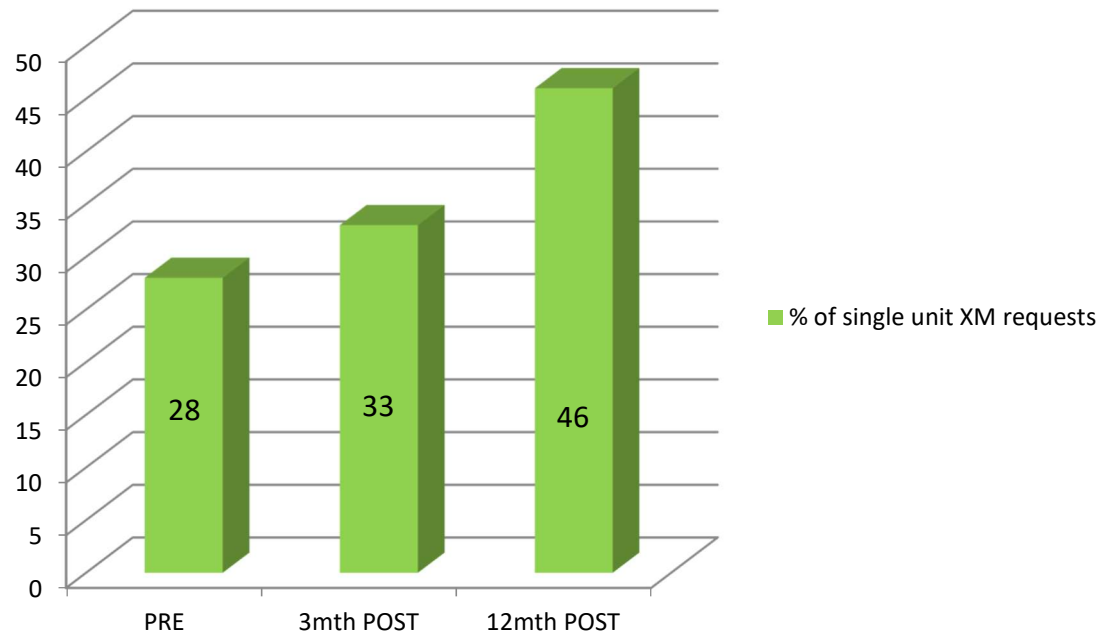
Comparison of pre and post implementation data:



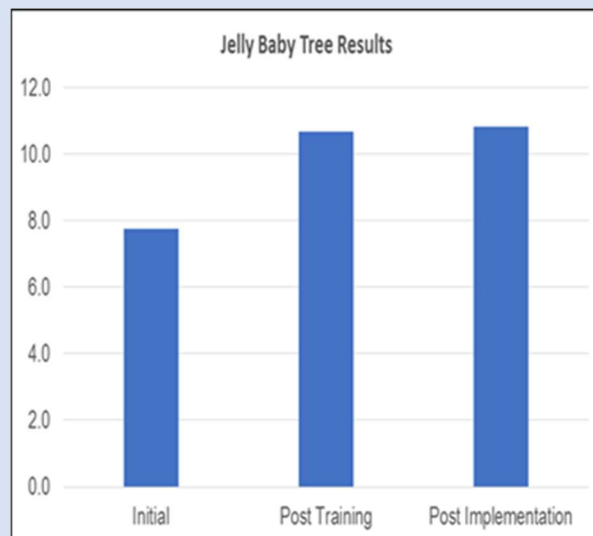
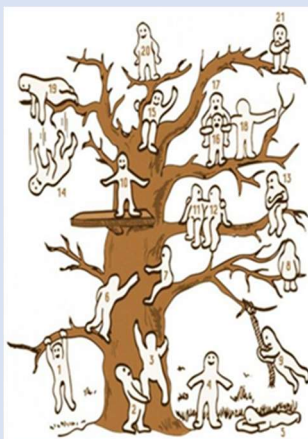
Comparison of pre and post implementation data:



% of single unit XM requests



Staff self-assessment results:



Conclusion	<p>It can be concluded that the appropriate use/empowerment project has had benefits for patient safety, shown by the decrease in the overall number of transfusions taking place along with the increased number of single unit transfusions requests seen post implementation. Staff confidence to question and discuss inappropriate requests was boosted and awareness of their essential part in the transfusion process was increased.</p> <p>The original project took place at Royal Derby Hospital, but the project initiatives have been taken on board at a further 16 hospitals across the East Midlands and Yorkshire and The Humber Regional Transfusion Committee (RTC) areas with added interest from other RTC areas. The training presentation has been given at each of these 16 hospitals and the level of engagement with the appropriate use and empowerment initiatives has been immense. The project has also been presented at the following educational events: Clinysis Users Group, British Blood Transfusion Committee Annual Conference 2019 (oral and poster presentation) Annual Serious Hazards of Transfusion Symposium 2019 (poster presentation) Blood Group Serology Conference 2020, East midlands RTC Education Day and at 3 RTC Lab Matters education days.</p> <p>We believe that the project is making a real difference to patient safety and encouraging the ethos of Patient Blood Management. Also, improving the confidence of our Biomedical Scientists to discuss possible inappropriate requests with the clinical areas and confirming their importance in the transfusion process.</p>
References	<ol style="list-style-type: none"> 1. Koch <i>et al.</i> Morbidity and mortality risk associated with red blood cells and blood component transfusion in isolated coronary artery bypass grafting. <i>Critical Care Medicine</i> 2006 34, 1608-1616. 2. Hebert et al. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. Transfusion Requirements in Critical Care Investigators, Canadian Critical Care Trials Group. <i>N Engl J Med</i> 1999; 340:409-17 3. Carson et al. Liberal or restrictive transfusion in high-risk patients after hip surgery. <i>N Engl J Med</i> 2011; 365:2453-62.

4. Ma M, Eckert K, Ralley F, et al. A retrospective study evaluating single-unit red blood cell transfusions in reducing allogeneic blood exposure. *Transfusion Med* 2005; 15:307-12.
5. Berger MD, Gerber B *et al* 2012. Significant reduction of red blood cell transfusion requirements by changing from a double-unit to a single-unit transfusion policy in patients receiving intensive chemotherapy or stem cell transplantation. *Haematologica*: 97 (1). 116-122
6. NICE guidelines on Blood Transfusion NG24 2015 <https://www.nice.org.uk/guidance/ng24>
7. BSH: Administration of Blood Components Guideline 2017 <https://b-s-h.org.uk/guidelines/guidelines/administration-of-blood-components/>
8. NICE Quality Standard QS138 <https://www.nice.org.uk/guidance/qs138>
9. Choosing Wisely UK <http://www.choosingwisely.co.uk/i-am-a-clinician/recommendations/>
10. National Blood Transfusion Committee Patient Blood Management. An evidence-based approach to patient care. (National blood transfusion committee 2013) at <http://www.transfusionguidelines.org.uk/uk-transfusion-committees/national-blood-transfusioncommittee/patient-blood-management>