

Challenges of changing transfusion practice

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Challenges for hospital transfusion

- Patient safety: few, ideally zero, errors and few complications of transfusion
- Effective use of blood: less inappropriate use = ?% further reduction in use
- Robust audit trail and documentation: 100%
- Good blood stock management and low wastage
- Good staff training
- Rapid availability: under-recognised issue



UK TRANSFUSION LABORATORY COLLABORATIVE **Recommended minimum** standards for hospital transfusion laboratories September 2010 Bill Chaffe, Joan Jones, Clare Milkins, Clare Taylor, Deborah Asher, Hedley Glencross, Mike Murphy and Hannah Cohen, on behalf of the UK Transfusion Laboratory Collaborative, c/o SHOT Office, Manchester,

UK

DH Department of Health

Health Service Circular

Series Number: HSC 2007/001 Gateway Reference: 9058 November 200 Issue Date:

Better Blood Transfusion Safe and Appropriate Use of Blood

For action by: Strategic Health Authorities (England) - Chief Executive Strategic Health Authorities (England) - Directors of Public Health NHS Trusts - Chief Executives Primary Care Trusts - Chief Executives and Main Contacts NHS Blood & Transplant - Chief Executive For information to Chief Medical Officers Wales/Scotland/Northern Ireland Nursing Statutory Bodies - Chief Executives Professional Associations and Royal Colleges Strategic Health Authority Directors of Public Health Strategic Health Authority Directors of Performance Management Strategic Health Authority Nurse Directors Postgraduate Medical Deans Monitor

Foundation Trusts

MANY DRIVERS FOR IMPROVING HOSPITAL TRANSFUSION



NHS Evidence

Electronic blood transfusion:

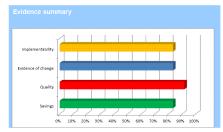
Improving safety and efficiency of transfusion systems

Provided by: Oxford Radcliffe Hospitals

Publication type: Quality and productivity example

QIPP Evidence provides users with practical case studies that address the quality and productivity challenge in health and social care. All examples submitted are evaluated by NICE. This evaluation is based on the degree to which the initiative meets the QIPP criteria of savings, guality, evidence and implementability; each criterion is given a score which are then combined to give an overall score. The overall score is used to identify the best examples, which are then shown on NHS Evidence as 'recommended'.

Our assessment of the degree to which this particular case study meets the criteria is represented in the evidence summary graphic below



Safer practice notice Right patient, right blood Blood transfusions involve a complex sequence of activities and, to ensure the right patient receives the right blood, there must be strict checking procedures in place at each state. An Intitative has been loanched that offers a range of long and short term strategies to ensure blood transfluidons are carried out safely. The Hatiman Brainst Safety Agency (MESA), the Chell Maddel Offician's National Blood Transfluidon. Committee (MBEC) and Sartous Hazards of Transfluidon (SHOT) have collaborated to develop and evaluate these strategies.¹ Administering the wrong blood type (ABO incompatibility) is the most serious outcome of error during transfusions. Most of these incidents are due to the failure of the final identity checks carried out between the patient (at the patient's side) and the blood to be transfused. Notice SHOT data have shown that between 1996 and 2004, five patients died as a direct neutrit of being given ABO incompatible blood. ABO incompatibility contributed to the deaths of a further nine patients and caused major modeldly in S4 patients.² 9 November 2006 Action for the NHS and the independent sector mmediate action By May 2007, all NHS and independent sector organisations responsible for administering blood transfusions in England and Wales should have: Action Agreed to and started to implement an action plan for competency-based training and assessment for all staff involved in blood transfusions. Update training and assessment to at some more in more instructions, Encared that the comparticity forms (or equivalent) and patient noise are not used as part of the final check at the patient's side. They should comply with that blood transfersion policy which stipulates that the final identity check must be done next to the patient by matching the blood pack with the patient's writehand (or idently bandycheck identification card). nformation request Ref: NPSA/2006/14 Systematically examined their local blood transfusion procedures, using formal risk assessment processes, and appraised the feasibility and releved unter- bar codes or other electronic identification and tracking systems for patients, samples and blood products (a clinical transfusion management system); b photo identification cards for patients who undergo regular blood transfusions

c a labelling system of matching samples and blood for transfusion to the velocial ner Social Care Integration Velocial Accountion of Thesian Numer Velocial Accountion of Accounting 1 Surgical Numer

Rapid Response Report

NPSA/2010/RRR017

From reporting to learning

21 October 2010

NHS

The transfusion of blood and blood components in an emergency

Issue The urgent provision of blood for life threatening haemorrhages requires a rapid, focused approach as excessive blood loss can jeopardise the survival of patients. Early recognition of major blood loss and immediate effective interventions are vital to avoid hypovolaemic shock and its consequences. One such action is the rapid provision of blood and blood components, for which effective communication between all personnel involved in the provision and transportation of blood is key.

Evidence of harm

During the period October 2006 to September 2010, the National Patient Safety Agency (NPSA) received reports of 11 deaths and 83 incidents in which a patient was harmed as a result of delays in the provision of blood in an acute situation.

Reducing the risk of harm

This Rapid Response Report (RRR) is intended to focus the attention of hospitals on the systems in place and the human factors that impact on the efficient provision of blood in emergencies. Other guidance available that should be considered alongside this RRR includes guidance issued by the British Committee for Standards in Haematology (2008); the recommendations of the Confidential Enquiries into Maternal and Child Health (CEMACH) (2007) for a protocol for the management of massive obstetric haemorrhage; and the Royal College of Obstetricians and Gynaecologists guidance Blood transfusion in obstetrics (2008)

For IMMEDIATE ACTION by the NHS and independent (acute) sector. Actions should be led by an executive director nominated by the Chief Executive, working with the Chair of the Hospital Transfusion Committee. Deadline for ACTION COMPLETE is 26 April 2011.

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National Patient Safety Agency

UK Blood Safety and Quality Regulations 2005

MHRA

Implementation of the EU Blood Safety Directive

Background and Guidance on reporting Serious Adverse Events & Serious Adverse Reactions





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BUT IMPLEMENTATION HAS BEEN CHALLENGING



NHS Evidence

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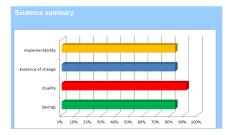
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Clinical Pathology Accreditation (UK) Ltd

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nformation request

Ref: NPSA/2006/14

Action

Update

systemation for Social Care Integration National Accounting of Integra Nation National Accounting of Accounting In Surgical Programs

"Better Blood Transfusion" 1998, 2002 and 2007

Concerns:

- Patient safety: errors, vCJD
- Demand for blood and shortages
- Evidence of variation in practice

Outputs in form of HSCs:

- HTC/HTTs, NBTC/RTCs
- Guidelines, audits
- Support from NHSBT
- Patient involvement
- Use of technology
- Clinical research

Health Service Circular



Series number: HSC 1998/224 Issue date: 11 December 1998 11 December 2001 Review date **Clinical Effectiveness** Category: Status: Action sets out a specific action on the part of the recipient

Better Blood Transfusion



NHS Trusts: Nursing Directors
Medical Schools: Deans
Post Graduate Deans
NHSE Regional Offices: Directors of Public Health
NHSE Regional Offices: Directors of Finance
Chief Executive: National Blood Authority
Medical Director: National Blood Authority
Professional Associations and Royal Colleges



1	1	
(DH)	Department
	-	of Health

Health Service Circular

	sets out a specific action on the part of the recipient with a deadline where appropriate
Status:	Action
Category:	Public Health
Review Date:	04 July 2005
Issue Date:	04 July 2002
Series Number:	HSC 2002/009

Better Blood Transfusion

Appropriate Use of Blood

For action by

Health Authorities (England) - Chief Executive Health Authorities (England) - Directors of Public Health NHS Trusts - Chief Executives

Primary Care Trusts - Chief Executives and Main Contacts

(DH) Department of Health

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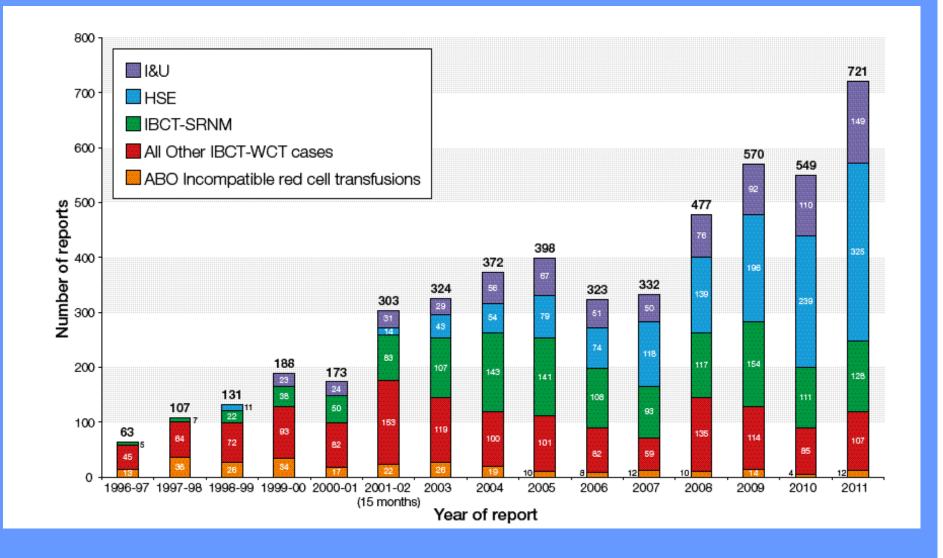
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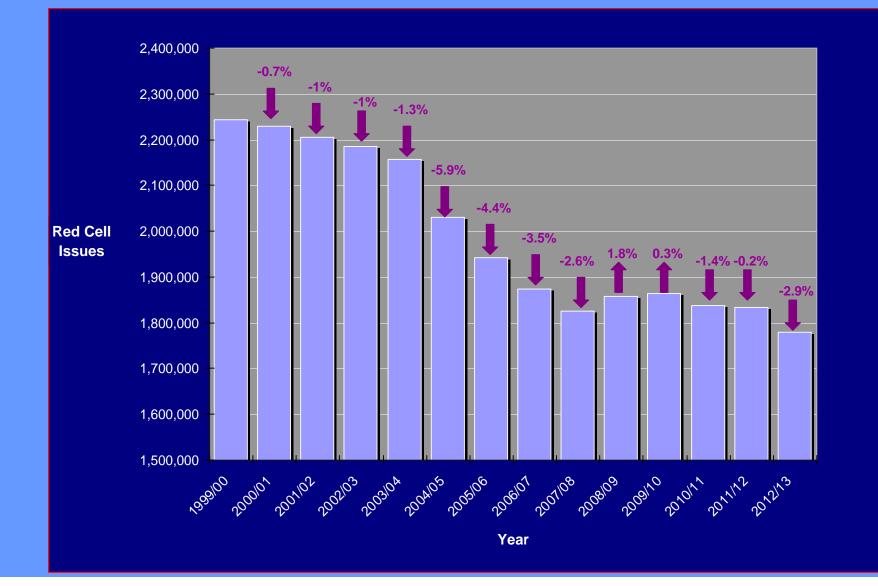
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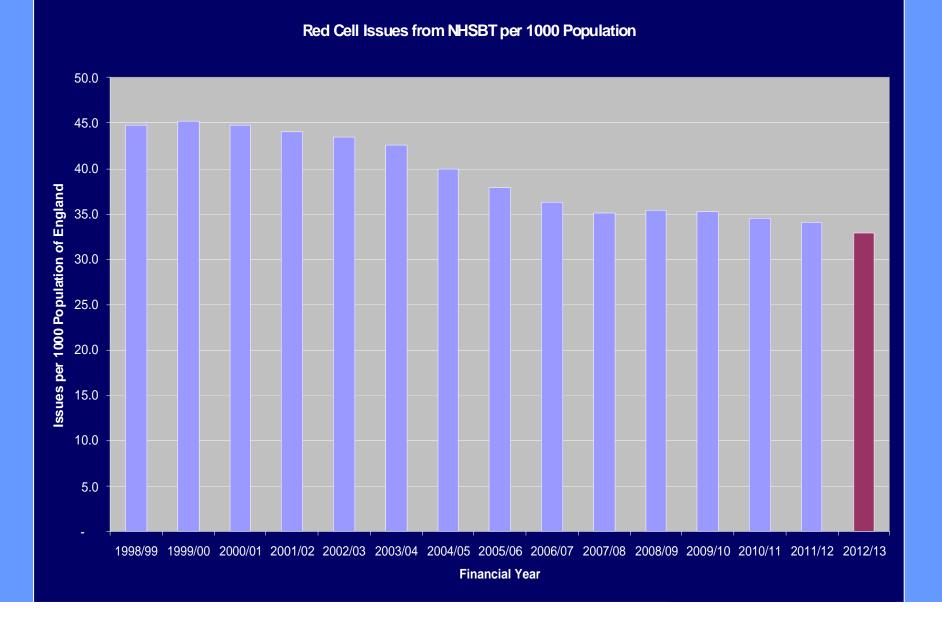
IBCT & ABO incompatible red cell transfusions (SHOT, 2011)



Change in red cell usage 1999-2013



Change in red cell issues/1000 population



Changes in proportion of red cell usage for main clinical specialties 1999-2009

	1999 to 2000		2004		2009	
Specialty	Units transfused	Percentage of all blood transfused	Units transfused	Percentage of all blood transfused	Units transfused	Percentage of a blood transfused
Medical	5047	52	5558	62	5158	64.2
Surgical	3982	41	3001	33	2360	29.4
Obstetrics/gynecology	612	6	444	5	509	6.4
Total number of units transfused	9774		9003		8025	

Tinegate et al. Ten-year pattern of red blood cell use in the north of England. Transfusion 2012 (epub).

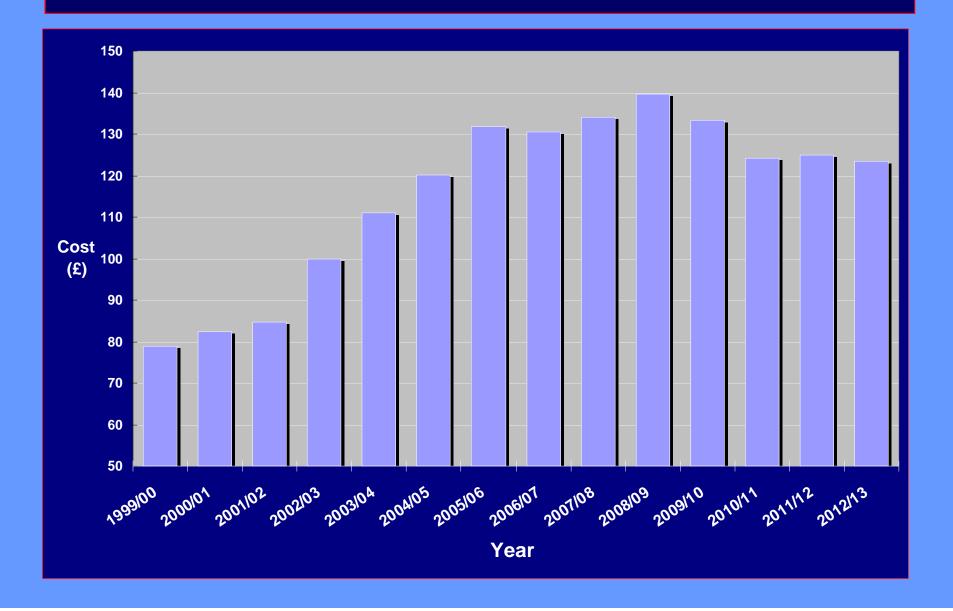
Possible reasons for reduction in red cell transfusion



- Better Blood Transfusion initiatives
- Concern about vCJD

 Increasing price of blood

Change in price of red cells 1999-2013



Change in platelet usage 1999-2013



Where are we now?

- National, regional and local audits consistently show inappropriate use of 15-20% red cells and 20-30% platelets/plasma
- Low uptake of methods to avoid use of blood
- Safety of hospital transfusion still an issue
- Poor education and training
- Lack of patient involvement
- Evidence base getting stronger but more research needed
- Poor IT for blood safety and for providing data on blood usage

See NBTC Annual Reports

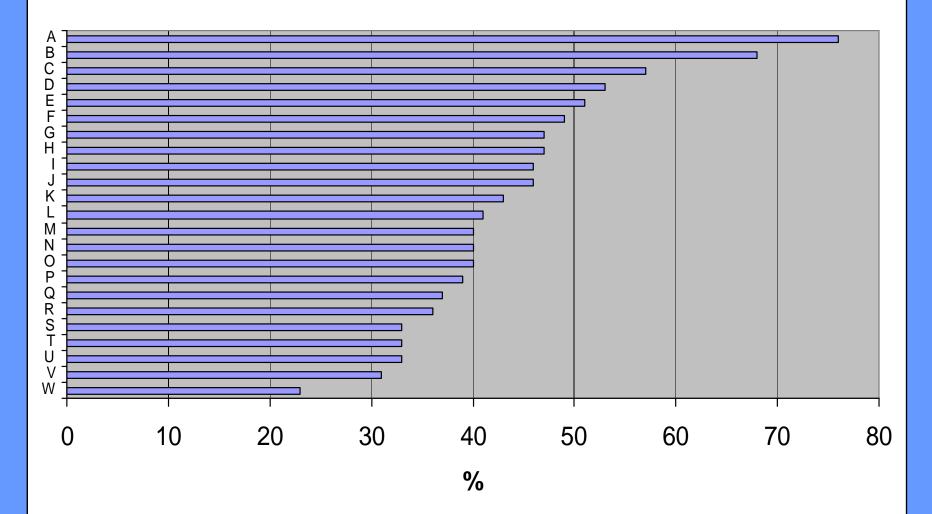
http://www.transfusionguidelines.org.uk/Index.aspx?Publication=NTC&Section=27&pageid=1075

Summary of the inappropriate use of blood from large regional and national audits of blood use

Audit	Year	Number of Hospitals	N cases audited	Inappropriate use	Guideline Standard
Red cell transfusion	2002	All 13 hospitals in N. Ireland	360	19% of patients inappropriately transfused and 29% over-transfused	British Committee for Standards in Haematology (BCSH) (2001)
Red cells in hip replacement	2007	139/167 (83%)	7465	48% of patients	British Orthopaedic Association (2005)
Upper GI bleeding	2007	217/257	6750	15% of RBCs, 42% of platelets, 27% of FFP	British Society of Gastroenterology (2002)
Red cell transfusion	2008	26/56 (46%) hospitals in 2 regions	1113	19.5% of transfusions	BCSH (2001)
FFP	2009	186/248 (75%)	5032	43% of transfusions to adults, 48% to children, 62% to infants	BCSH (2004)
Platelets in haematology	2011	139/153 (91%)	3296	27% of transfusions	BCSH (2003)
Cryoprecipitate	2012	43/82 (52%) from 3 regions	449	25% of transfusions	BCSH (2004)

National audit of blood use in cardiac surgery, 2011

Proportion of CABG patients receiving RBCs



Patient Blood Management (PBM)

NHS Blood and Transplant



Programme Monday 18th June 2012

A joint initiative with The Department of Health and The National Blood Transfusion Committee Patient Blood Management Guidelines: Module 3

Medical

GETTING STARTED in PATIENT BLOOD MANAGEMENT

Getting Started in Blood Management





An evidence-based, multidisciplinary approach to optimising the care of patients who might need a blood transfusion

PBM includes:-

- Minimising blood sample volume
- Appropriate transfusion triggers
- Managing pre-op anaemia
- Intra- and post-op management
 e.g. cell salvage, assessing and managing abnormal haemostasis

Need better data on transfusion:

- Which patients?
- Why?

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dvancing Transfusion and Allular Therapies Worldwir

- Provide feedback to clinicians
- Provide 'decision support'

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What has happened since then?

- National Blood Transfusion Committee has established a PBM working group
- Initial recommendations have been drafted

See NBTC website: Patient Blood Management

http://www.transfusionguidelines.org.uk/Index.aspx?Publication=NTC&Section=27&pageid=7728

Patient Blood Management

Further work includes:

- > a 'baseline' national audit (later this year)
- central mechanism for benchmarking blood usage and transfusion practice in hospitals
- Standard dataset for transfusion
- development of performance indicators

See NBTC website: Patient Blood Management

http://www.transfusionguidelines.org.uk/Index.aspx?Publication=NTC&Section=27&pageid=7728

"Our vision in Oxford"

To develop and implement process change supported by IT to:-

- Enhance patient safety
- Reduce the administrative burden for clinical staff
- Optimise our use of resources (reduce blood use and blood wastage)
- Achieve compliance with tightening statutory and governance requirements
- Ensure the rapid availability of blood for urgent transfusions

End-to-end electronic transfusion

Bar-coded patient ID on the wristband is used to label the sample and blood bag Davies et al. *Transfusion* 2006; 46: 352-364



Benefits 2006-11

(125,000+ units red cells transfused) (Murphy et al. *Transfusion*, in press)

- No ABO incompatible red cell transfusions
- No serious wrong blood events
- Wrong blood in tube' reduced by over 50% to 1 in 26,690 samples (national benchmark 1 in 3,000 samples)
- Compliance with blood traceability, competency assessment etc
- Less blood wastage
- Lower blood usage (12% in 6 years)

Estimated costs and cost savings

(Murphy et al. *Transfusion*, in press)

Costs:

About £11/unit to cover lease of bedside and fridge hardware, software licences, training, and a system manager (= £350k/year for Oxford)

Productivity gains:

- Nursing time (£500k/year)
- Transfusion laboratory staff time (£20k/year) Staff and time for meeting regulatory requirements and for training (£20k/year)

Cash releasing savings:

- Blood wastage (£20k/year) Blood usage (£400k/year)

Compares well with some transfusion safety measures







Challenges for development and implementation (...'changing practice')

Murphy et al (2009). Transfusion 49;829-837

- Getting started: recognising the need and developing the initial business case
- Engaging and getting support from senior management, IT, and clinical colleagues
- Identifying appropriate commercial partner
- Conducting pilots and documenting benefits: leading to further business cases
- Funding: £1.5 million/first 5 years
- Project management: 160 clinical areas
- Training: 4,000 nurses and 1,400 doctors
- Establishing/maintaining implementation team
- Monitoring progress
- Publishing output and celebrating success

National implementation of electronic transfusion systems

2007*2010Blood tracking 23/98 (24%)55/116 (47%)Bedside check 12/98 (12%)18/115 (16%)

Data from surveys of hospitals in England by the National Blood Transfusion Committee

* Murphy MF & Little T. A survey of hospital blood transfusion laboratory information technology systems and their functionality. *Transfusion Medicine* 2008; 18: 204-206).

Blood ordering process using EPR

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*Collection Priority:	Urgent	~
*Collection Date/Time:	04/03/2013	GMT
Collect Now:	● Yes C No	
*Specimen Type:	Blood	~
*Previous Transfusion History:		~
Previous Atypical Antibodies:		~
*Transfusion Reason:		~
Haemoglobin:	6	
*Red Blood Cell Transfusion Criteria:		~
*Special Transfusion Requirements:		~
*Red Cells - no. of units:		
*Date/Time Required:	××/××/××××	GMT
ocation of patient at time of transfusion (if diff to current):		
*Bleep/Telephone Number:		
Label Printer:	<u>.</u>	
	C Yes No	
Clinical Details:	and the way	

Select clinical reason for transfusion

Tetails for Red cells							
Details IF Order Comments IF Diagnosis							
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*Collection Priority:	Planned v						
*Collection Date/Time:	05/03/2013 🕂 🔽 1447 🕂 GMT						
Collect Now:	O Yes 💿 No						
*Specimen Type:	Blood						
*Previous Transfusion History:	Yes						
Previous Atypical Antibodies:							
*Transfusion Reason:	Ortho-Primary Hip						
Haemoglobin:	Ohs-APH						
*Red Blood Cell Transfusion Criteria:	Obs-DIC						
*Special Transfusion Requirements:	Obs-PPH						
*Red Cells - no. of units:	Onc-Radiotherapy						
	Ortho-Primary Knee						
*Date/Time Required:	Ortho-redo Knee						
Location of patient at time of transfusion (if diff to current):							
*Bleep/Telephone Number:							
Label Printer:							
Nurse Collect:	O Yes No						
Clinical Details:							

Select specific criteria for transfusion

■ Details for Red cells							
Details Details Dider Comments							
*Collection Priority:	Planned 🗸						
*Collection Date/Time:	05/03/2013 🗧 🕇 🖌 🕇	GMT					
Collect Now:	🔿 Yes 🔘 No						
*Specimen Type:	Blood 🗸						
*Previous Transfusion History:	Yes						
Previous Atypical Antibodies:	v						
*Transfusion Reason:	Ortho-Primary Hip 🗸 🗸						
Haemoglobin:	11						
*Red Blood Cell Transfusion Criteria:							
*Special Transfusion Requirements:	Massive bleeding with BP instability Hb <= 7 in stable ICU patient						
*Red Cells - no. of units:	Hb <= 8.0 non-ICU pt + s/s anemia Hb <= 10 with acute cardiac ischemia						
*Date/Time Required:	Surgical blood loss anticipated Other	GMT					
Location of patient at time of transfusion (if diff to current):							
*Bleep/Telephone Number:							
Label Printer:							
Nurse Collect:	🔿 Yes 🔘 No						
Clinical Details:							
L							

Complete number of units, time etc

T Details for Red cells					
Details U Order Comments Diagnosis					
+ = In. V×					
*Collection Priority:	Planned 🗸				
*Collection Date/Time:	05/03/2013 🗧 🖬 🚺 🗧 GMT				
Collect Now:	🔿 Yes 🔎 No				
*Specimen Type:	Blood 🗸				
*Previous Transfusion History:	Yes 🗸				
Previous Atypical Antibodies:	•				
*Transfusion Reason:	Ortho-Primary Hip 🗸 🗸				
Haemoglobin:	11				
*Red Blood Cell Transfusion Criteria:	Hb <= 8.0 non-ICU pt + s/s anemia				
*Special Transfusion Requirements:	<none></none>				
*Red Cells - no. of units:	3				
*Date/Time Required:	05/03/2013 🗧 🖌 🚺 🛨 GMT				
Location of patient at time of transfusion (if diff to current):	Ward 12				
*Bleep/Telephone Number:	1988				
Label Printer:					
Nurse Collect:	🔿 Yes 🔎 No				
Clinical Details:	Post Op (Hip)				
L					

Alert if criteria for appropriate transfusion not met

Discern:



TOTAL BLOOD MANAGEMENT ALERT

The most recent haemoglobin level available for this patient is greater than 8g/dl; outside the OUH guidelines for administration of red blood cells based on evidence-based treatment for anaemia. Specific clinical conditions such as an acute ischemic event or acute on-going blood loss may justify a variation from the guideline. In the absence of these conditions, the risks of transfusion may exceed the benefits at this haemoglobin level. Please choose the appropriate action below to resolve this alert.

Alert Action

Cancel Blood Transfusion Order

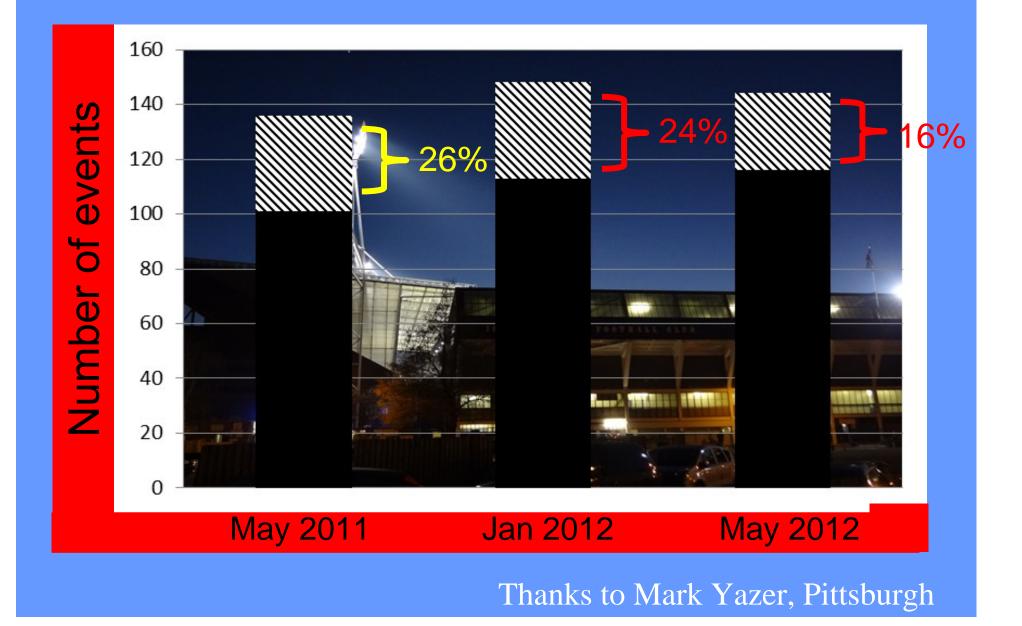
O Proceed with Blood Transfusion Order

OK

Effectiveness of RBC alert – about 10%

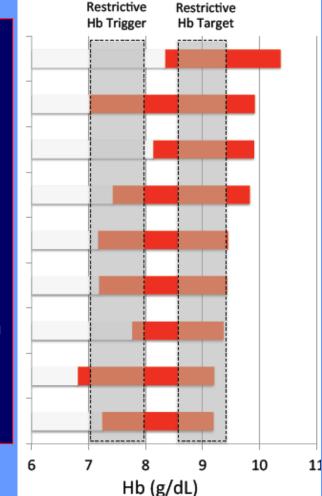


Effectiveness of plasma alert



Monitoring of blood usage

Specialty A Specialty B Specialty C **Specialty D** Specialty E Specialty F Specialty G Specialty H Specialty I



Horizontal bars are the Hb trigger to target range for all transfused patients

Trigger: lowest Hb Target: last Hb before discharge

Ideally: Trigger: pre-Tx Hb Target: post-Tx Hb

Blood utilization in hospitals in England

- There has been significant improvement supported by education, training and audit /blood utilization review
- But further progress is required
- Reliance on these standard methods will not be enough
- Improvement in evidence on optimal transfusion practice and in methods to implement it