Recent initiatives for improving transfusion practice in the UK including *Choosing Wisely*

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Oxford University Hospitals
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NHS
Blood and Transplant

Aims of talk

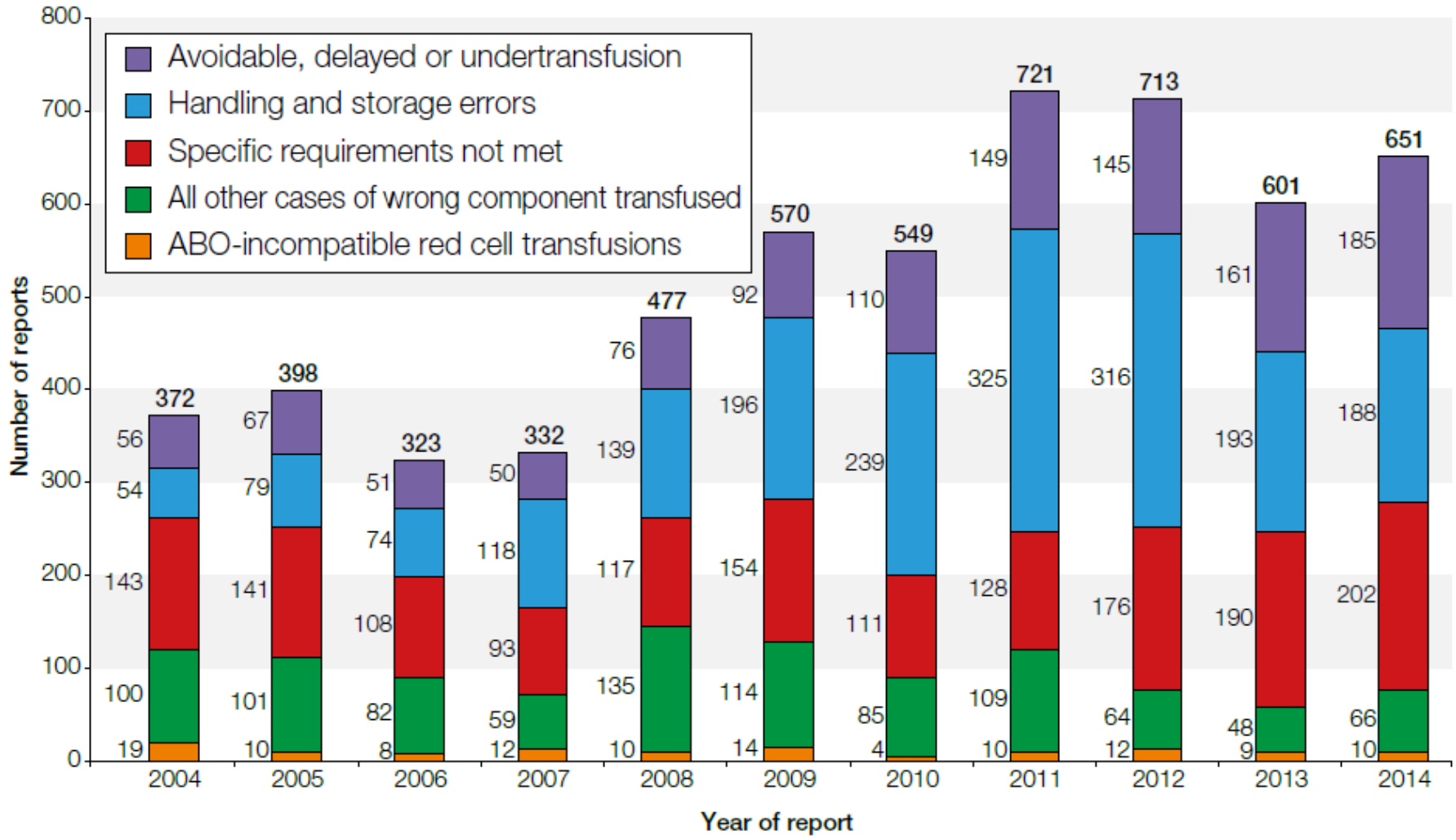
- Describe current state of transfusion practice in the UK
- Describe current initiatives for improving transfusion practice and progress in implementing them

Where are we now?

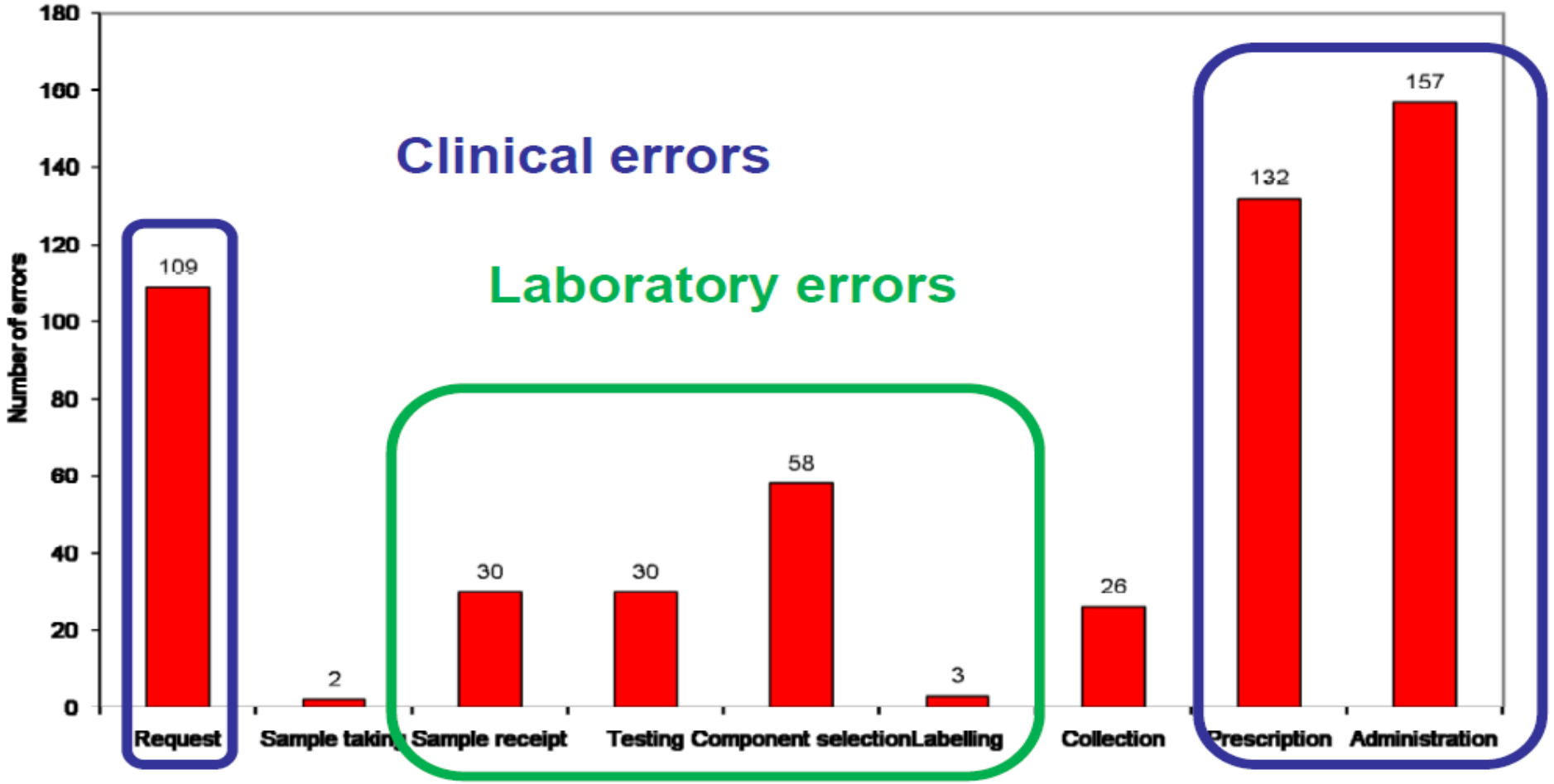
- Evidence base for good transfusion practice getting stronger
- National, regional and local audits consistently show inappropriate use of 15-20% red cells and 20-30% platelets/plasma
- Low uptake of methods to avoid use of blood
- Safety of hospital transfusion still an issue
- Poor education and training
- Transfusion laboratories poorly resourced
- 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

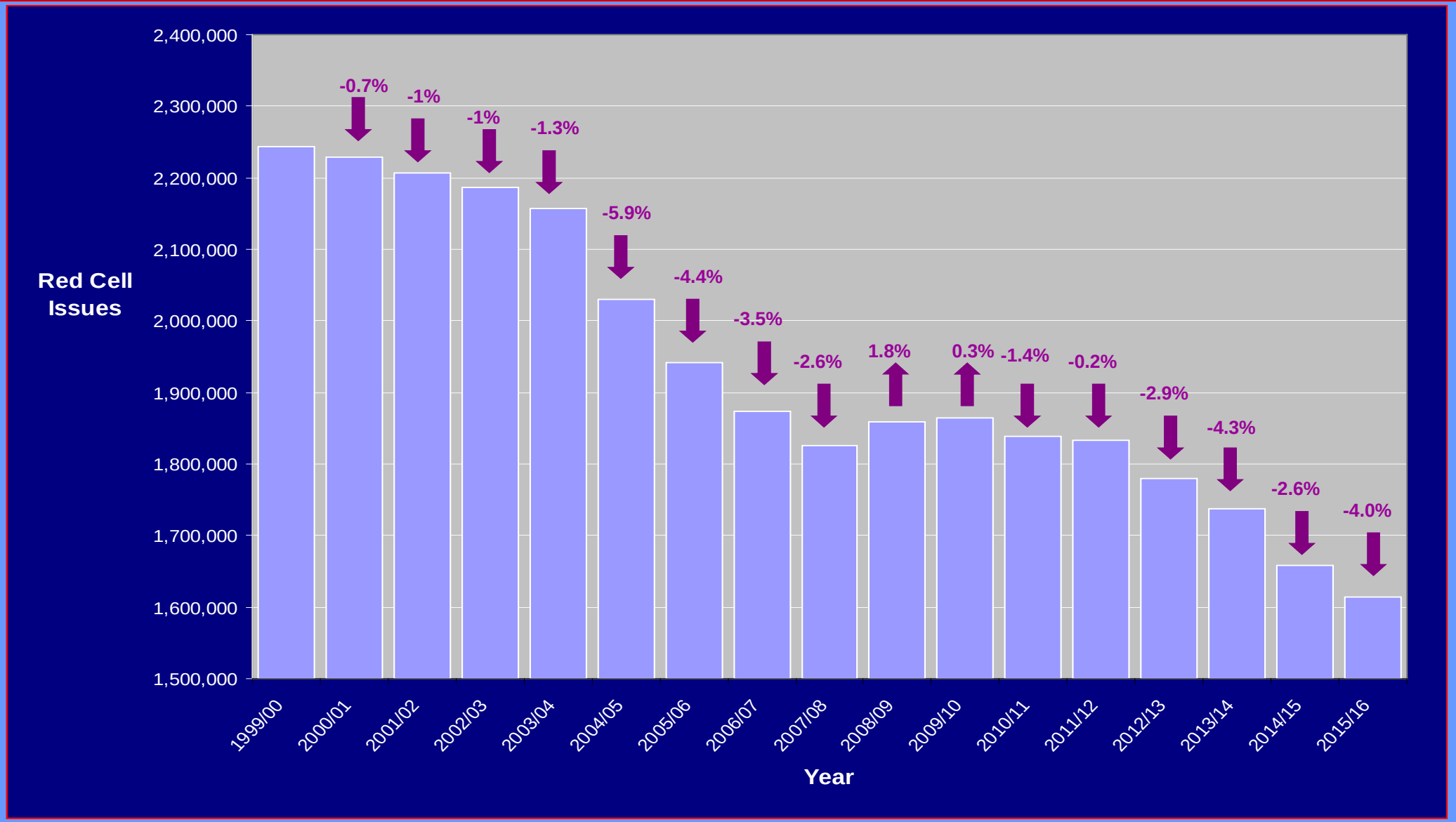
Data from Serious Hazards of Transfusion (SHOT), 2014



Incorrect blood component transfused
Where are the mistakes made?



Reduction in red cell usage in England 1999-2016



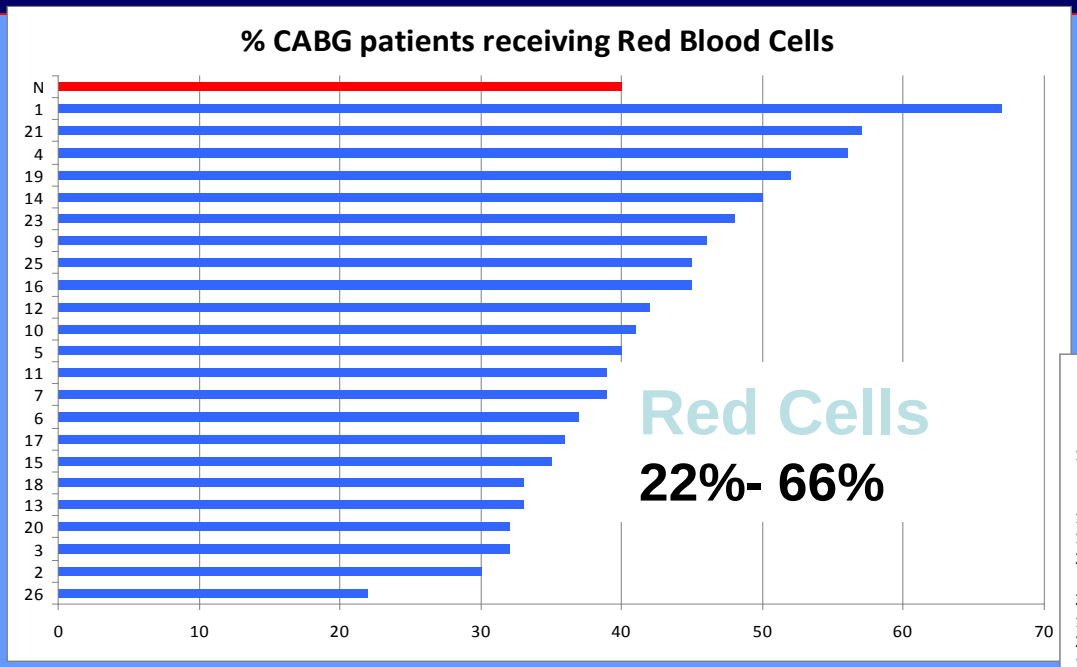
High level of inappropriate use of blood
Data from large regional and national audits of blood use

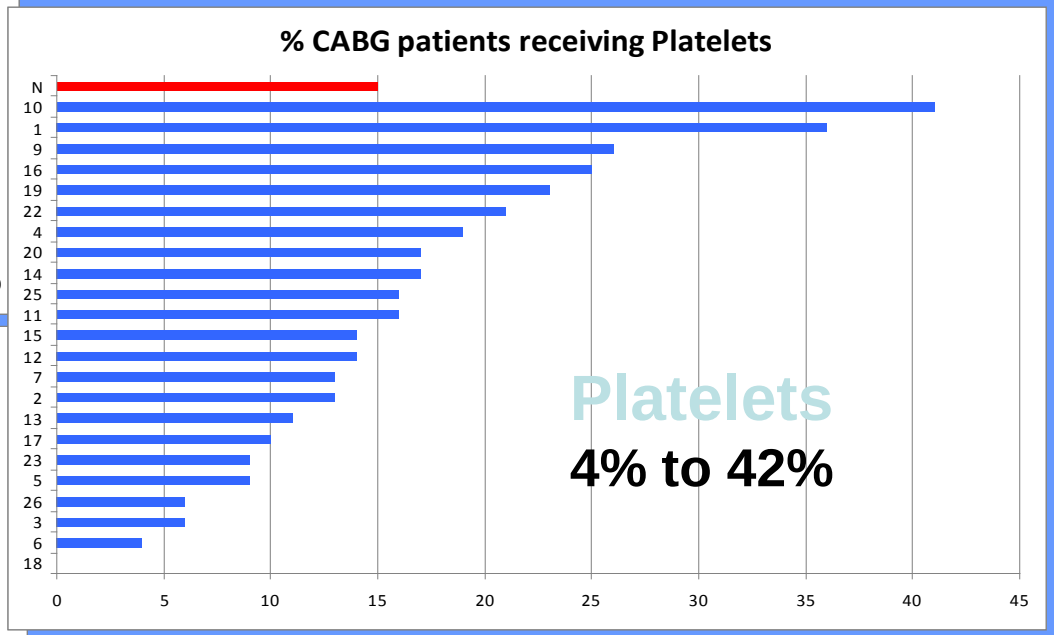
Audit	Year	Number of Hospitals	N cases audited	Inappropriate use	Guideline Standard
Red cell transfusion	2002	All 13 hospitals in N. Ireland	360	19% of patients inappropriately transfused and 29% over-transfused	British Committee for Standards in Haematology (BCSH) (2001)
Red cells in hip replacement	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)

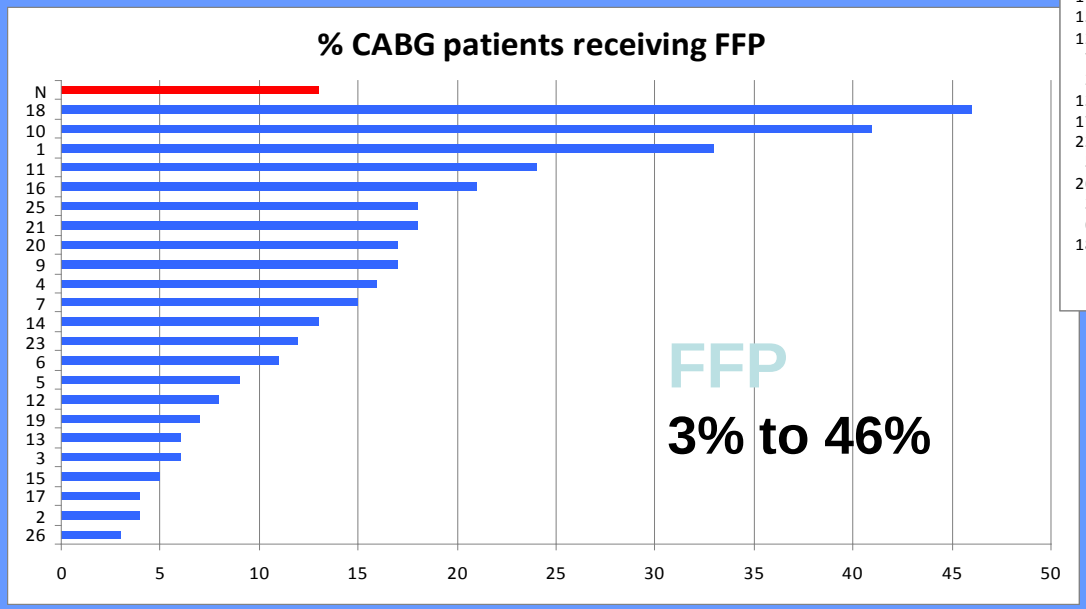
http://hospital.blood.co.uk/safe_use/clinical_audit/National_Comparative/index.asp

Large variation in use of blood by different clinical teams

National audit of blood use in cardiac surgery, 2011



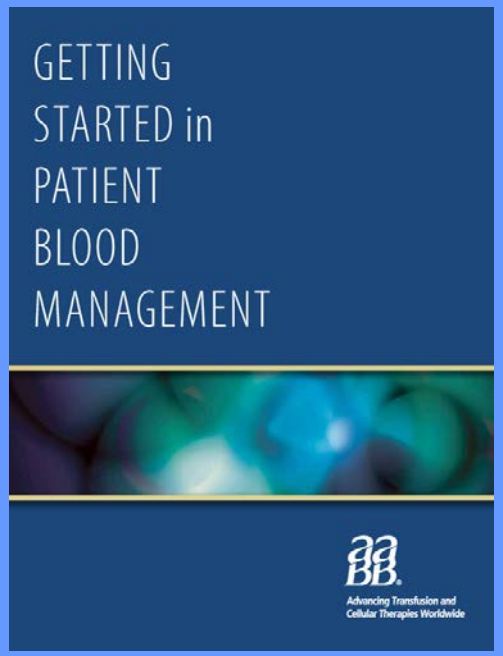


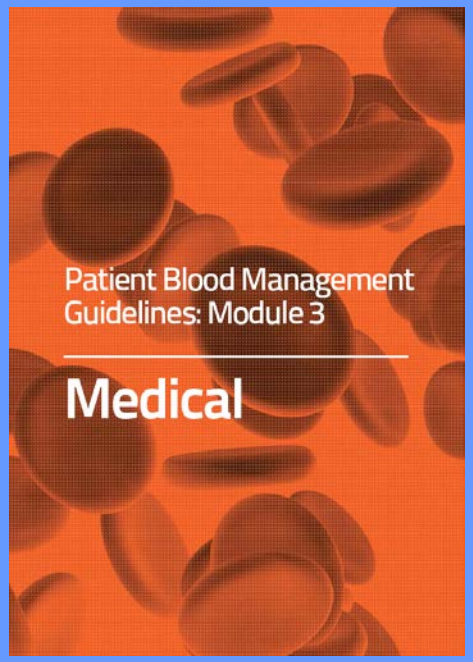


Current initiatives in transfusion medicine

- ***UK Transfusion Laboratory Collaborative***
- **Patient blood management**
- **NICE guidelines and quality standards**
- ***Choosing Wisely***

Patient Blood Management (PBM)





Definition: ***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 anaemia**
- **Intra- and post-op management e.g. cell salvage, assessing and managing abnormal haemostasis**
- **Data collection on transfusion (which patients, how much blood)**
- **Feedback of data to clinicians and ideally decision support**

Choosing Wisely®

An initiative of the ABIM Foundation

NICE recommendations for RBC transfusion

Thresholds and targets

- **Use restrictive RBC transfusion thresholds for patients who need RBC transfusions and who do not have major haemorrhage or acute coronary syndrome**
- **When using a restrictive RBC transfusion threshold, consider a Hb threshold of 70 g/l and a Hb target of 70–90 g/l after transfusion**
- **Consider a RBC transfusion threshold of 80 g/l and a Hb target of 80–100 g/l for patients with acute coronary syndrome**
- **Consider individual Hb thresholds and targets for patients on regular transfusions for chronic anaemia**

NICE guideline on Transfusion, November 2015

https://www.nice.org.uk/guidance/ng24

NICE recommendations for RBC transfusion

Doses

- **Consider single-unit RBC transfusions for adults who do not have active bleeding**
- **After each single-unit RBC transfusion clinically reassess and check the Hb, and give further transfusions if needed**

NICE guideline on Transfusion, November 2015

https://www.nice.org.uk/guidance/ng24

NICE recommendations for alternatives to transfusion for patients undergoing surgery

Cell salvage and tranexamic acid

- **Offer tranexamic acid to adults undergoing surgery who are expected to have at least moderate blood loss (greater than 500 ml)**
- **Do not routinely offer cell salvage alone**
- **Consider intra-operative cell salvage with tranexamic acid for patients who are expected to lose a very high volume of blood**

NICE guideline on Transfusion, November 2015

https://www.nice.org.uk/guidance/ng24

NICE Quality Standards (initial and amended proposals)

1. **Provide verbal and written information to patients who may have or who have had a transfusion**

   People who may have or who have had a transfusion are given verbal and written information about the benefits and risks of transfusion
2. **Use single unit red cell transfusions for adults (or equivalent body weights for children) who do not have active bleeding**

   People who receive a red cell transfusion are clinically reassessed and have their Hb checked after each unit
3. **Use tranexamic acid for adults undergoing surgery who are expected to have at least 500mL blood loss**

   Adults who having surgery and expected to have moderate blood loss are **offered tranexamic acid**
4. **Treat iron deficiency anaemia with oral or iv iron rather than blood transfusion**

   People with iron deficiency anaemia are offered iron supplementation before and after surgery

NICE Quality Standards (rejected proposals)

Removed:

- **Use a threshold of a haemoglobin concentration (Hb) of 70g/L and a target of a Hb of 90g/L for red cell transfusions except for major haemorrhage, patients with acute coronary syndrome and patients on chronic transfusion regimens**
- **Use electronic systems for patient identification for blood samples for compatibility testing and the pre-transfusion bedside check**
- **Use electronic decision support for blood ordering to reduce inappropriate blood transfusions**

How to implement PBM

- **National/international initiatives to avoid over-use of diagnostic tests and treatments**

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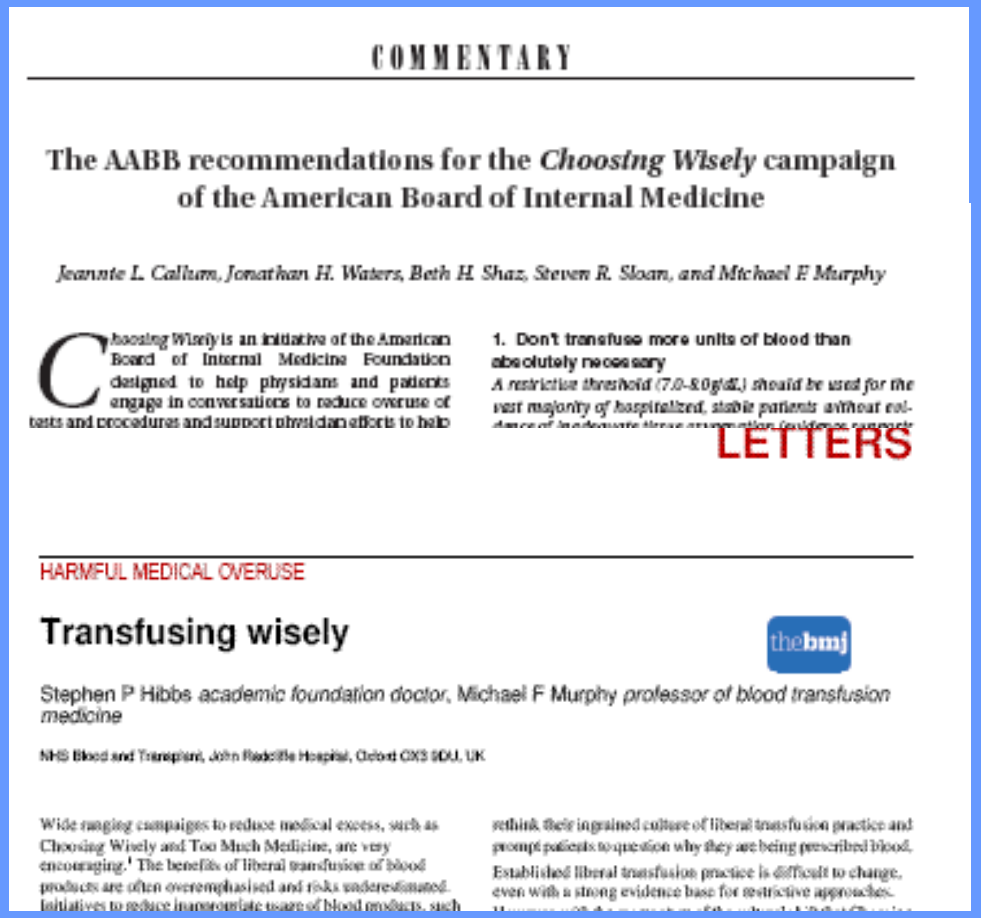
ANALYSIS

Choosing Wisely in the UK: the Academy of Medical Royal Colleges' initiative to reduce the harms of too much medicine

OPEN ACCESS

A Malhotra and colleagues explain how and why a US initiative to get doctors to stop using interventions with no benefit is being brought to the UK

A Malhotra *consultant clinical associate*[1], D Maughan *Royal College of Psychiatrists sustainability fellow*[2], J Ansell *advanced trainee in general surgery*[3], R Lehman *senior research fellow*[4], A Henderson *chief executive*[1], M Gray *director*[5], T Stephenson *former chair*[1 6], S Bailey *chair*[1]



COMMENTARY

The AABB recommendations for the *Choosing Wisely* campaign of the American Board of Internal Medicine

Jeannie L. Callum, Jonathan H. Waters, Beth H. Shaz, Steven R. Sloan, and Michael F Murphy

Choosing Wisely is an initiative of the American Board of Internal Medicine Foundation designed to help physicians and patients engage in conversations to reduce overuse of tests and procedures and support physician efforts to help

1. Don't transfuse more units of blood than absolutely necessary

A restrictive threshold (7.0–8.0 g/dL) should be used for the vast majority of hospitalized, stable patients without evi-

LETTERS

HARMFUL MEDICAL OVERUSE

Transfusing wisely

thebmj

Stephen P Hibbs *academic foundation doctor*, Michael F Murphy *professor of blood transfusion medicine*

NHS Blood and Transplant, John Radcliffe Hospital, Oxford OX3 9DU, UK

Wide ranging campaigns to reduce medical excess, such as Choosing Wisely and Too Much Medicine, are very encouraging.[1] The benefits of liberal transfusion of blood products are often overemphasised and risks underestimated. Initiatives to reduce inappropriate usage of blood products, such

rethink their ingrained culture of liberal transfusion practice and prompt patients to question why they are being prescribed blood.

Established liberal transfusion practice is difficult to change, even with a strong evidence base for restrictive approaches.

Choosing Wisely®

An initiative of the ABIM Foundation

Choosing Wisely: 5 questions to ask your doctor before you get any test, treatment or procedure

Do I really need this test or procedure? Medical tests help you and your doctor or other health care provider decide how to treat a problem. And medical procedures help to atreat it.

What are the risks? Will there be side effects? What are the chances of getting results that aren't accurate? Could that lead to more testing or another procedure?

Are there simpler, safer options? Sometimes all you need to do is make lifestyle changes, such as eating healthier foods or exercising more.

What happens if I don't do anything? Ask if your condition might get worse – or better if you don't have the test or procedure right away.

How much does it cost? Ask if there are less expensive tests, treatments or procedures, what your insurance may cover.

Choosing Wisely®

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Recommendations on blood transfusion by the AABB for the *Choosing Wisely* campaign

Callum JL, Waters J, Shaz B, Sloan S, & Murphy MF. *Transfusion* 2014; 54: 2344-2352.

1. Don't transfuse more units of blood than absolutely necessary
2. Don't transfuse red blood cells for iron deficiency without hemodynamic instability
3. Don't routinely use blood products to reverse warfarin
4. Don't perform serial blood counts on clinically stable patients
5. Don't transfuse O negative blood except to O negative patients and in emergencies for women of child bearing potential with unknown blood group

Choosing Wisely®

An initiative of the ABIM Foundation

American Society of Hematology

Helping hematologists conquer blood diseases worldwide

- Don’t transfuse more than the minimum RBC units necessary for symptoms of anemia or to return a patient to a safe Hb range (7 to 8 g/dL in stable, non-cardiac, in-patients)
- Don’t transfuse sickle cell disease patients for chronic anemia or uncomplicated pain crisis without a good clinical indication
- Don’t test or treat for suspected heparin-induced thrombocytopenia (HIT) in patients with low probability of HIT
- Don’t treat patients with immune thrombocytopenic purpura in the absence of bleeding or a very low platelet count
- Don't administer plasma or prothrombin complex concentrates for non-emergent reversal of vitamin K antagonists

ACADEMY OF MEDICAL ROYAL COLLEGES

Amended recommendations on transfusion for the UK *Choosing Wisely* campaign

(initial and amended proposals)

1. ~~Don't use liberal thresholds for patients needing red cell transfusions or use more than one unit at a time except when the patient has active bleeding~~

   Use restrictive thresholds for patients needing red cell transfusions and only one unit at a time except when the patient has active bleeding

2. ~~Don't routinely transfuse platelets for patients with chemotherapy-induced thrombocytopenia if the platelet count is > 10 x 109/L in absence of bleeding~~

   Only consider transfusing platelets for patients with chemotherapy-induced thrombocytopenia where the platelet count is < 10 x 109/L except when undergoing a procedure with a high risk of bleeding

ACADEMY OF MEDICAL ROYAL COLLEGES

Recommendations on blood transfusion by the UK *Choosing Wisely* campaign

3. Don't transfuse a patient without informing the patient about the risks and benefits of transfusion

   Inform patients of the risks and benefits of blood transfusion,wherever possible

4. Don’t transfuse O negative blood except to O negative patients and in emergencies for women of child bearing potential with unknown blood group

   Only transfuse O Rh D negative red cells to O RhD negative patients and in emergencies for females of childbearing potential with unknown blood group

Removed:

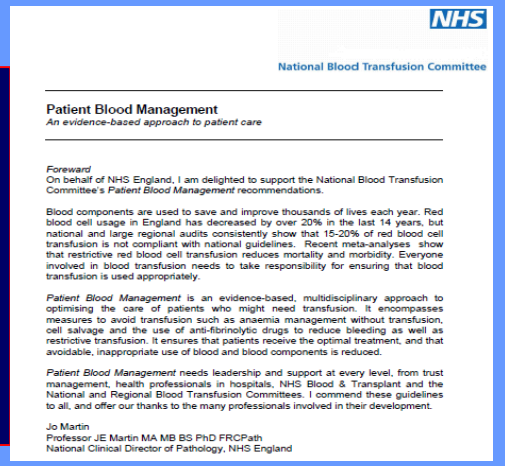
Don’t transfuse red blood cells for iron deficiency without haemodynamic instability

Limitations of the *Choosing Wisely* campaign

- No evidence as yet that CW has been effective
- Telephone survey of 600 US physicians found that only 21% had even heard of CW
- How to implement CW? Benchmarking, feedback of data, dashboards etc
- A formal implementation plan is needed for each topic
- For transfusion, link to other initiatives like PBM and use of IT

Guidelines for the implementation of PBM

National Blood Transfusion Committee (England) recommendations (2014)



NHS

National Blood Transfusion Committee

Patient Blood Management

An evidence-based approach to patient care

Foreward

On behalf of NHS England, I am delighted to support the National Blood Transfusion Committee's *Patient Blood Management* recommendations.

Blood components are used to save and improve thousands of lives each year. Red blood cell usage in England has decreased by over 20% in the last 14 years, but national and large regional audits consistently show that 15-20% of red blood cell transfusion is not compliant with national guidelines. Recent meta-analyses show that restrictive red blood cell transfusion reduces mortality and morbidity. Everyone involved in blood transfusion needs to take responsibility for ensuring that blood transfusion is used appropriately.

Patient Blood Management is an evidence-based, multidisciplinary approach to optimising the care of patients who might need transfusion. It encompasses measures to avoid transfusion such as anaemia management without transfusion, cell salvage and the use of anti-fibrinolytic drugs to reduce bleeding as well as restrictive transfusion. It ensures that patients receive the optimal treatment, and that avoidable, inappropriate use of blood and blood components is reduced.

Patient Blood Management needs leadership and support at every level, from trust management, health professionals in hospitals, NHS Blood & Transplant and the National and Regional Blood Transfusion Committees. I commend these guidelines to all, and offer our thanks to the many professionals involved in their development.

Jo Martin
Professor JE Martin MA MB BS PhD FRCPath
National Clinical Director of Pathology, NHS England

D. Implementation of PBM

Implementation of good practice for blood avoidance and the use of blood
• Analyse casemix and clinical services to determine the main targets for PBM
• Identify PBM champions to help educate staff and patients
• Establish a PBM committee (either stand-alone or within the Hospital Transfusion Committee) to oversee the PBM programme
• Obtain a mandate for PBM from hospital management
• Educate clinicians about PBM and evidence-based transfusion practice
• Adopt a PBM scorecard to share with senior NHS Trust members to monitor adherence to guidelines for blood avoidance and the use of blood, including the use of benchmarking to identify clinicians/clinical teams who are consistently well outside of average blood use for a specific procedure

http://www.transfusionguidelines.org.uk/uk-transfusion-committees/national-blood-transfusion-committee/patient-blood-management

PBM Surveys England 2013 & 2015

	2013	2015
Response	146/149 (98%)	136/149 (91%)
≥1 WTE Transfusion Practioner	76%	70%
Transfusion Practitioner time spent on supporting PBM	<30% time in 65% of hospitals	PBM ranked lowest after education, competency assessment, incident investigation and tracing fate of blood
Hospitals with haematologists with transfusion sessions	54%	72%
Audits of blood usage	50%	74%
Reports to clinical teams on blood usage	<50%	60%
Cross-charge for blood costs	33%	34%

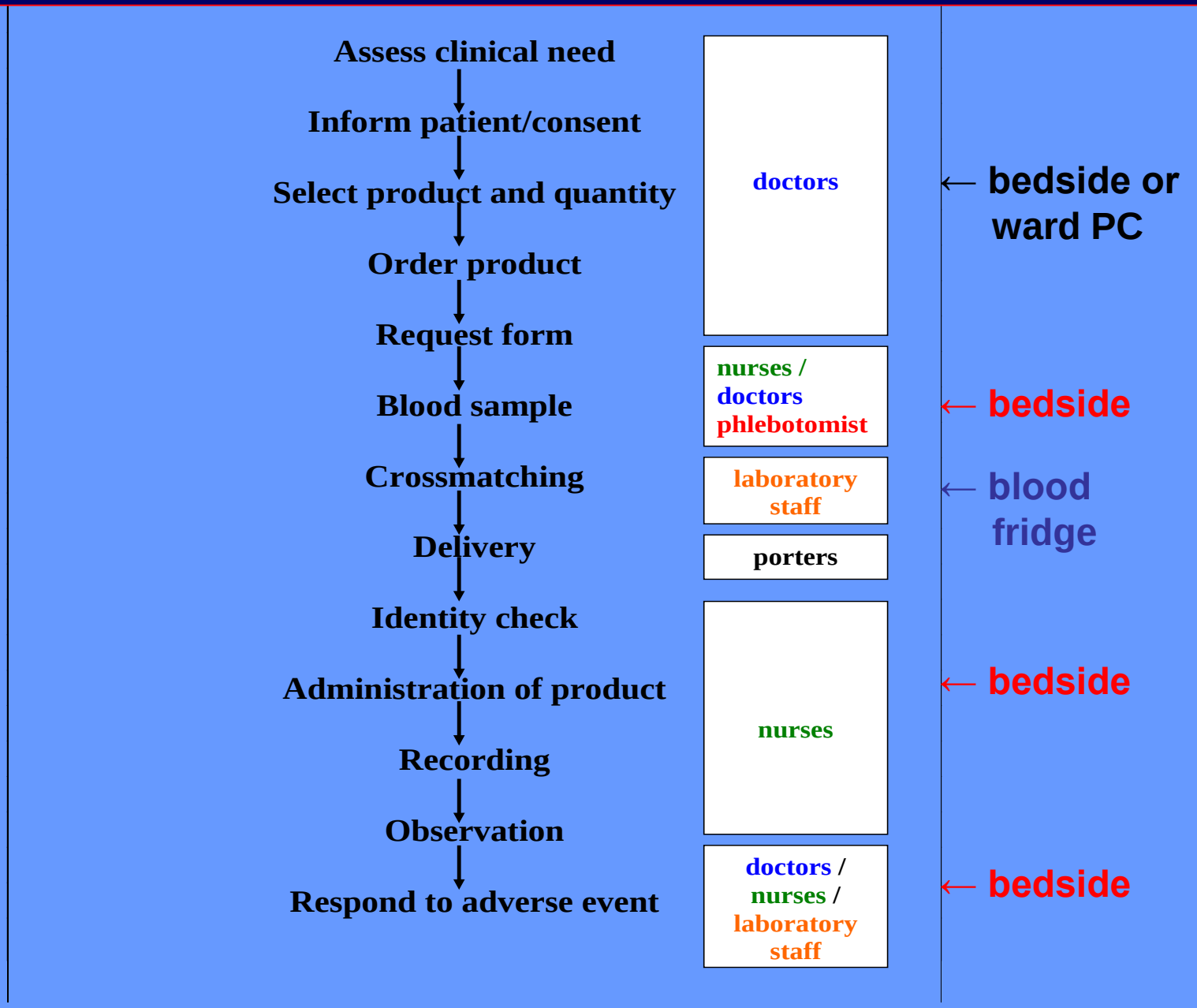
PBM Survey England 2015

		Yes, the policy covers all areas	Yes, but it covers only specific areas	No, but we are planning to	No, we do not intend to implement such a policy
Red Cells Have you implemented a lower transfusion threshold policy for red cells in non-bleeding patients?	128	54	12	45	17
	100%	42%	9%	35%	13%
Single Unit Do you have a single unit red cell transfusion policy?	129	35	11	68	15
	100%	27% (29%)	8%	53%	12%
ATD Platelets Do you have a policy for transfusing one ATD of platelets at a time in non-bleeding patients	129	90	6	25	8
	100%	70% (50%)	5%	19%	6%

What resources are needed to implement PBM?

- Not well described or evidence based
- Depends on resources already available and on the objectives of the PBM initiative
- Benchmarking, feedback of data, use of dashboards etc are key
- Good IT is a major enabler
- Provides other benefits e.g. feedback of data to blood services for demand planning

Hospital transfusion process



End-to-end electronic process for transfusion safety

Transfusion safety at the bedside

Assess clinical need	doctors	← bedside or ward PC
Inform patient/consent		
Select product and quantity		
Order product		
Request form		
Blood sample	nurses / doctors phlebotomist	← bedside
Crossmatching	laboratory staff	← blood fridge
Delivery	porters	
Identity check	nurses	← bedside
Administration of product		
Recording		
Observation		
Respond to adverse event	doctors / nurses / laboratory staff	← bedside

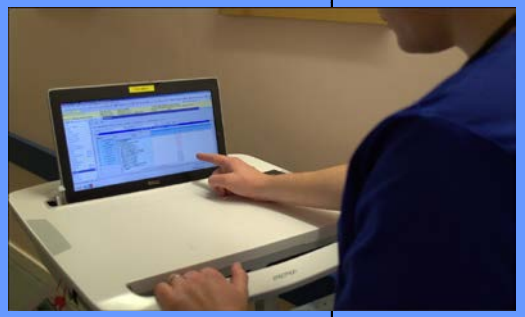
End-to-end electronic process for transfusion safety

Transfusion safety at blood fridges

Assess clinical need	doctors	← bedside or ward PC
Inform patient/consent		
Select product and quantity		
Order product		
Request form		
Blood sample	nurses / doctors phlebotomist	← bedside
Crossmatching	laboratory staff	← blood fridge
Delivery	porters	
Identity check	nurses	← bedside
Administration of product		
Recording		
Observation		
Respond to adverse event	doctors / nurses / laboratory staff	← bedside

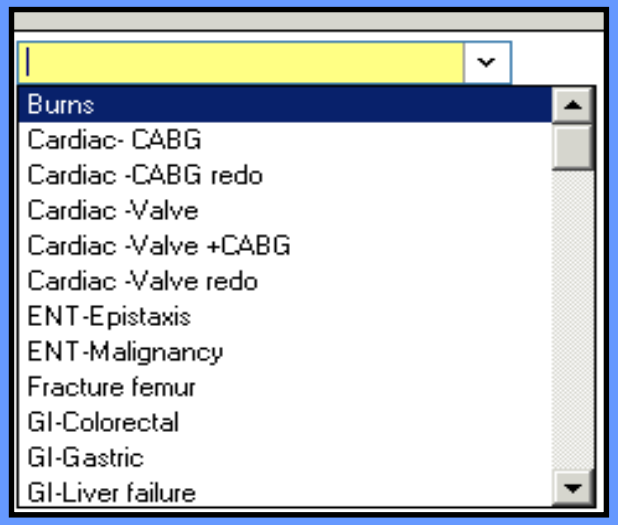
Development of electronic blood ordering

'Decision support'
for better practice



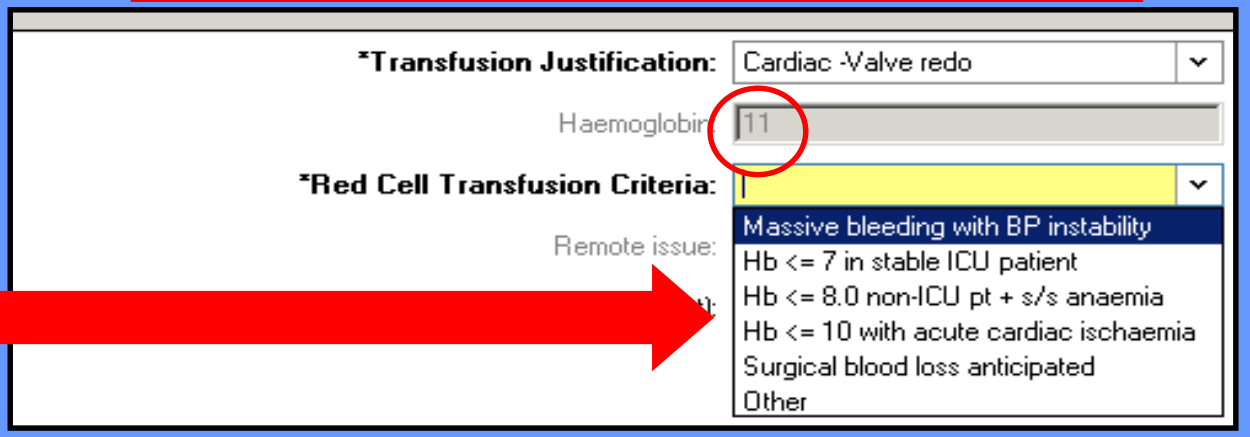
Assess clinical need	doctors	← bedside or ward PC
Inform patient/consent		
Select product and quantity		
Order product		
Request form		
Blood sample	nurses / doctors phlebotomist	← bedside
Crossmatching	laboratory staff	← blood fridge
Delivery	porters	
Identity check	nurses	← bedside
Administration of product		
Recording		
Observation		
Respond to adverse event	doctors / nurses / laboratory staff	← bedside

Electronic blood ordering and decision support



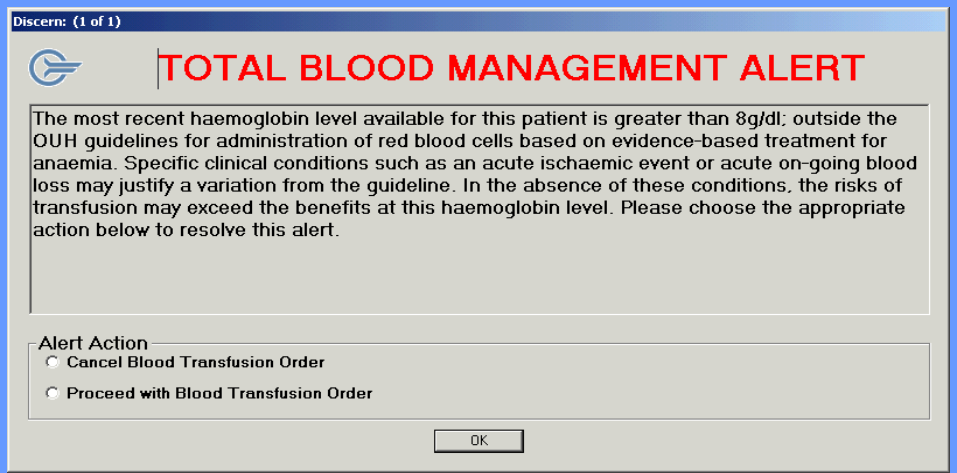
1 Capture the diagnostic group

Automatic capture of the most recent relevant result

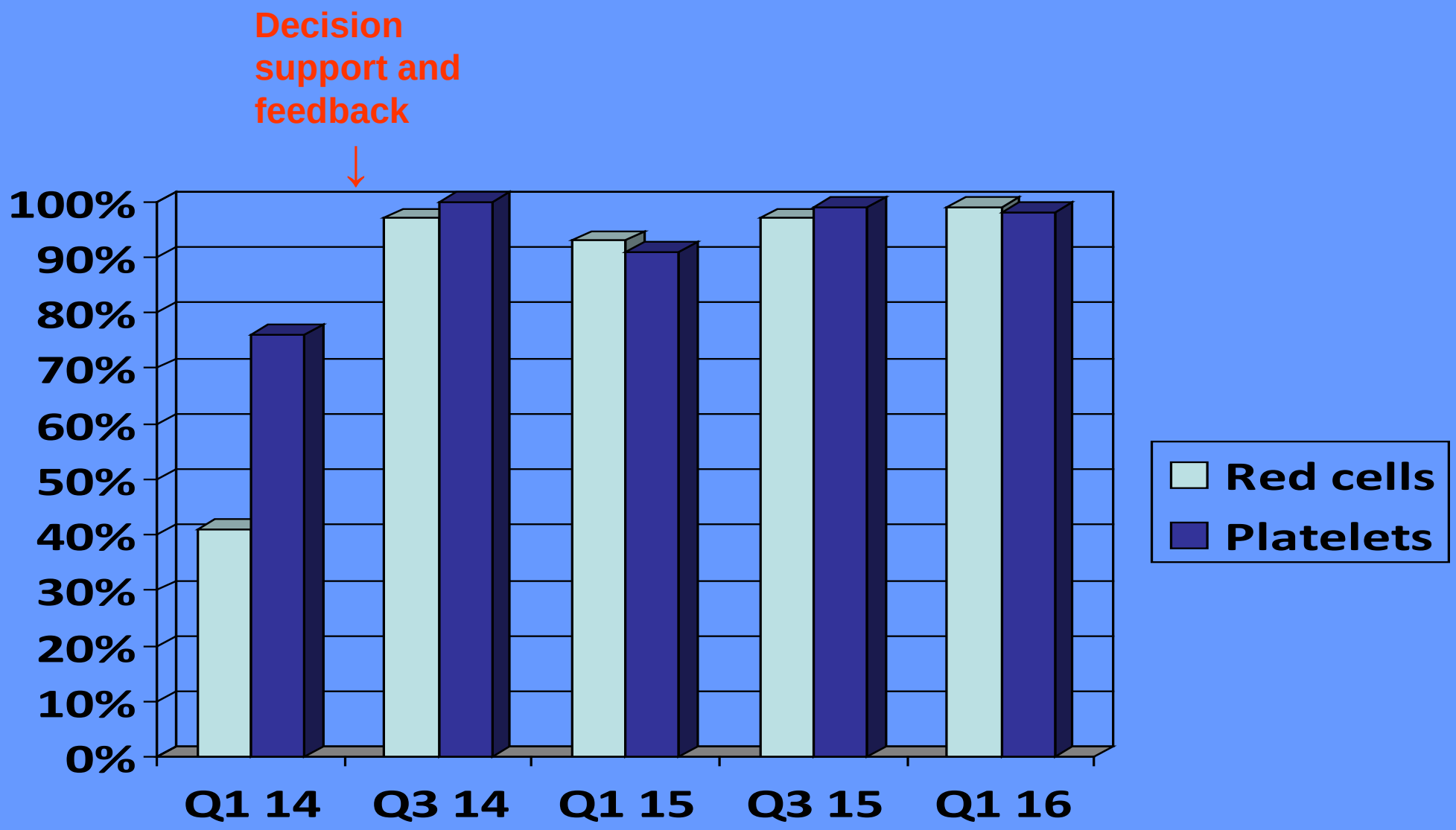


2 Select a reason for transfusion

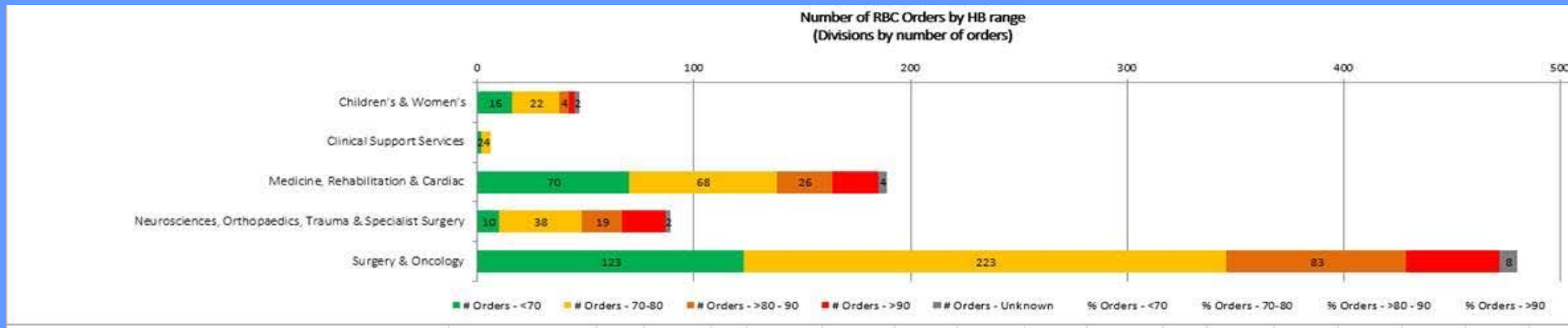
3 Alert if transfusion not justified



Compliance with agreed transfusion triggers in haematology improved from <50% to >90%



Feedback of data to clinical teams
(Red cell usage by OUH Division)



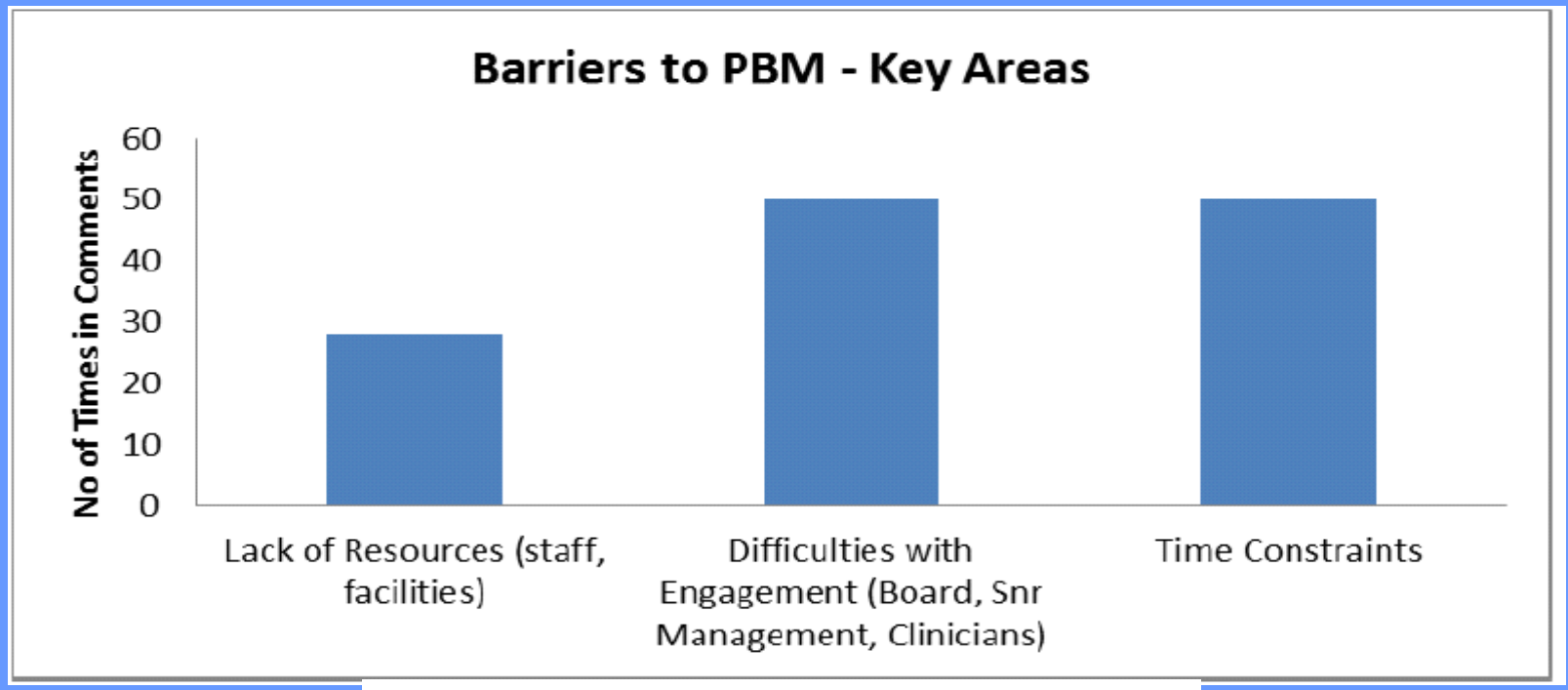
Order_Month	01/10/2015
TransfCriterialnclusion	Hb

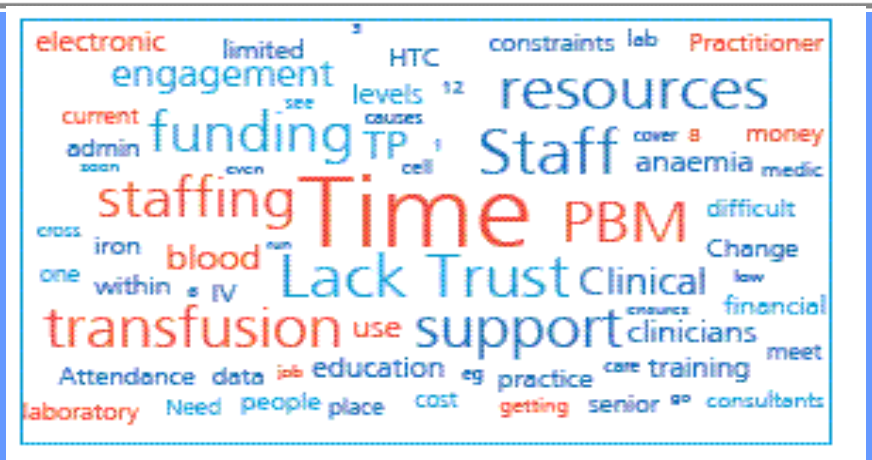
	Hb Prior to Order									
	# Orders					% Orders				
Div/Direc/Spec	<70	70-80	>80 - 90	>90	Unknown	<70	70-80	>80 - 90	>90	Unknown
Children's & Women's	16	22	4	3	2	34.04%	46.81%	8.51%	6.38%	4.26%
Clinical Support Services	2	4				33.33%	66.67%	0.00%	0.00%	0.00%
Medicine, Rehabilitation & Cardiac	70	68	26	21	4	37.04%	35.98%	13.76%	11.11%	2.12%
Neurosciences, Orthopaedics, Trauma & Specialist Surgery	10	38	19	20	2	11.24%	42.70%	21.35%	22.47%	2.25%
Surgery & Oncology	123	223	83	43	8	25.63%	46.46%	17.29%	8.96%	1.67%
Grand Total	221	355	132	87	16	27.25%	43.77%	16.28%	10.73%	1.97%

Reduction in OUH blood use and cost savings 2014

	2013 (units)	2014 (units)	Reduction in units	% OUHT change	% national change	Cost reduction
Red Cells	27,371	24,313	3058 x £122.09	-11.1	-2.6	£373,351
Platelets	4193	3645	548 x £208.09	-13.0	+1.3	£114,033
FFP	5348	4996	352 x £27.98	-6.6	-2.4	£9849
Total cost reduction						£497,233

What are the barriers to implementing PBM?
PBM Survey England 2015





Final thoughts

- Still much to do to provide safe and effective transfusion services based on PBM principles
- Demand for blood will continue to decrease as PBM is better implemented
- The declining demand presents a significant challenge for blood services worldwide
- But it also provides an opportunity for blood services to engage more closely with hospitals to improve the safety and efficiency of transfusion

Thank you: NHSBT Patients Blood Management Team

Thank you: Oxford Blood Safety and Conservation Team

Funding: NHS Blood & Transplant and Oxford Biomedical Research Centre
Research Nurses: Claire Dyer, Amanda Davies, Simon Noel, Juliet Smith
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Implementation team: Barbara Cripps, Alan Cook, Edward Fraser, Rachel Parker
Commercial partners: Haemonetics, Cerner