Oxford University Hospitals NHS
NHS Trust

Challenges of changing transfusion practice

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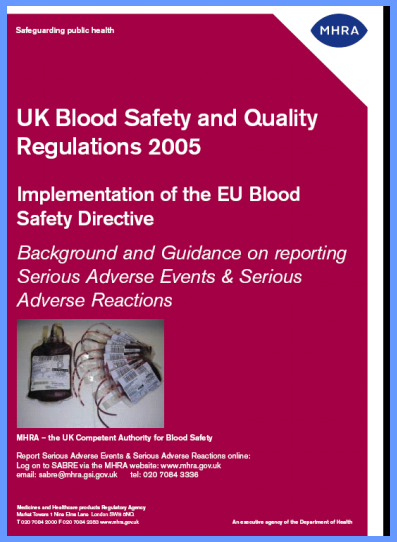
Challenges for hospital transfusion

- **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

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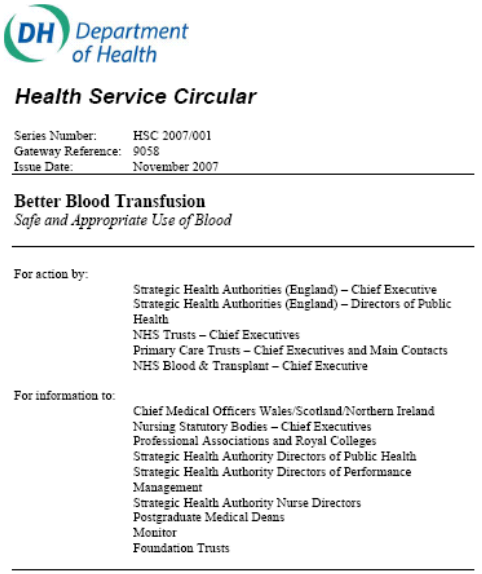
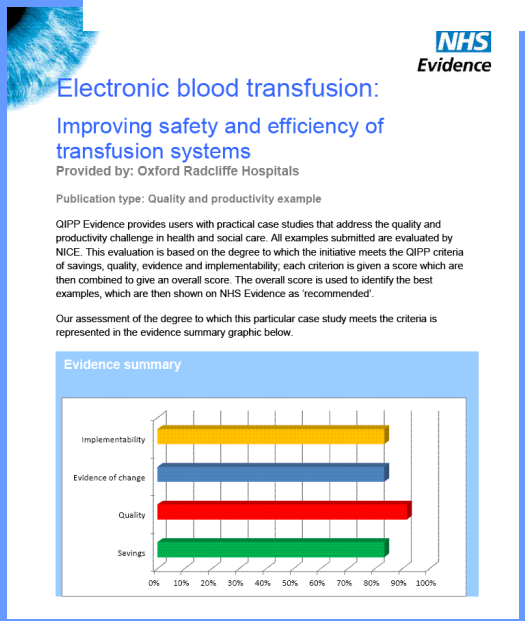
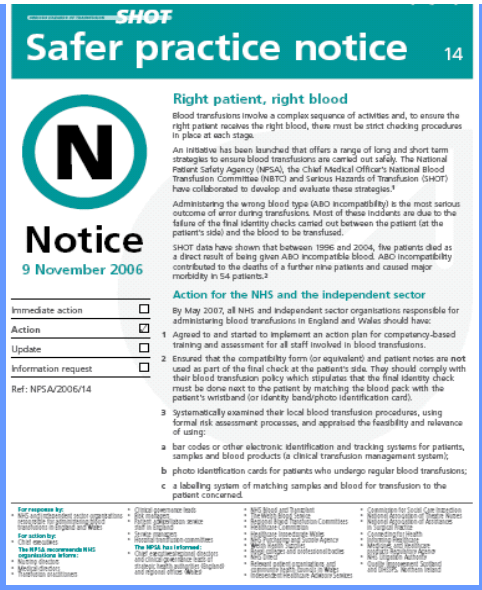
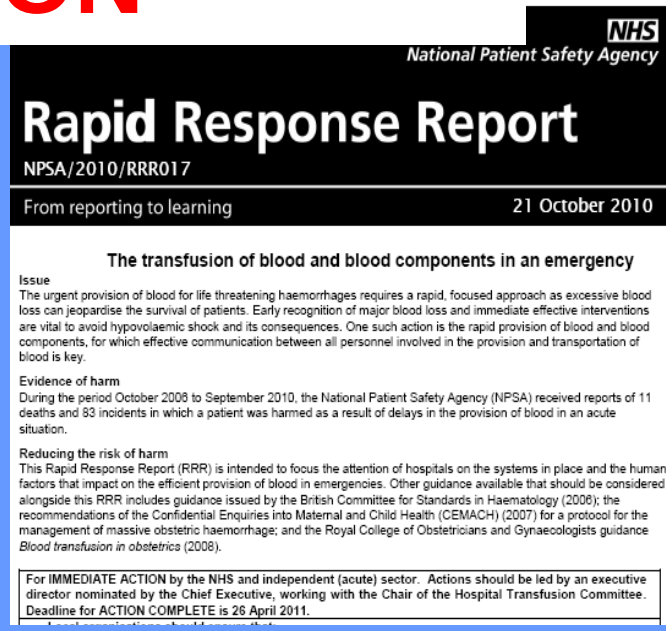
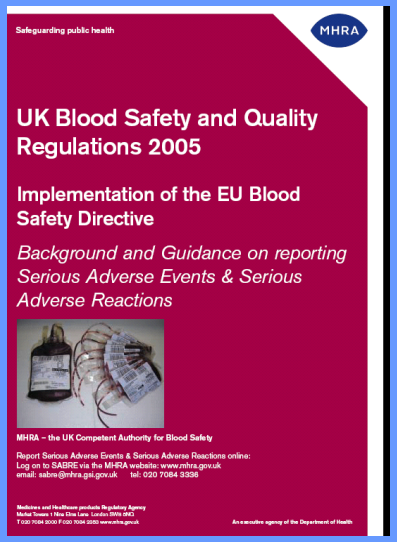


MANY DRIVERS FOR IMPROVING HOSPITAL TRANSFUSION









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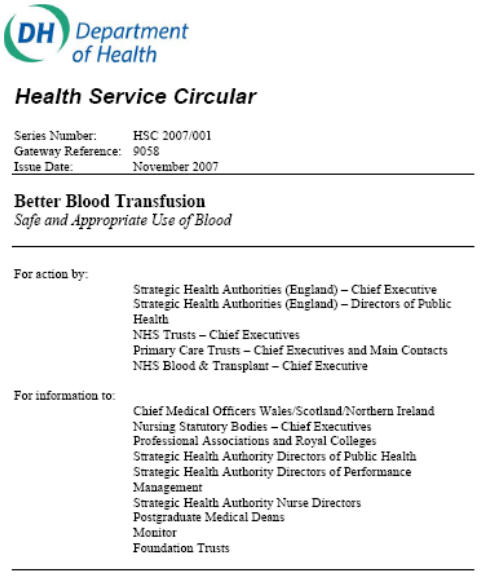
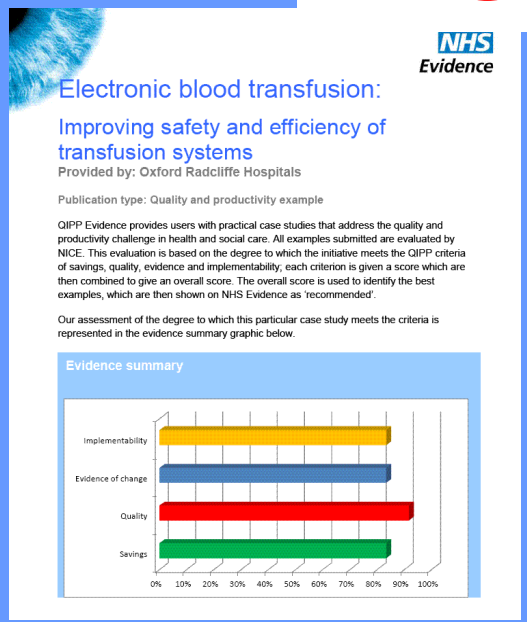
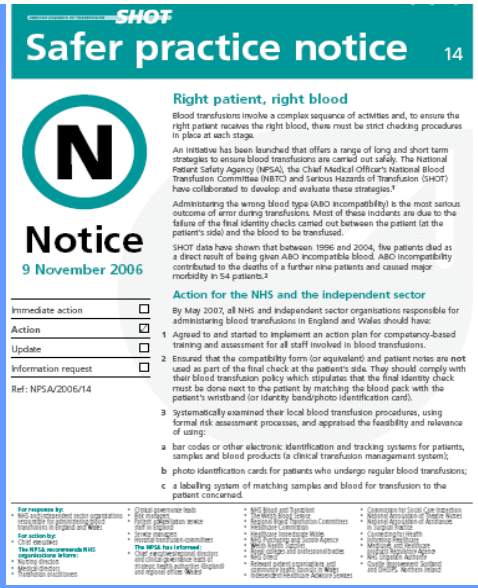
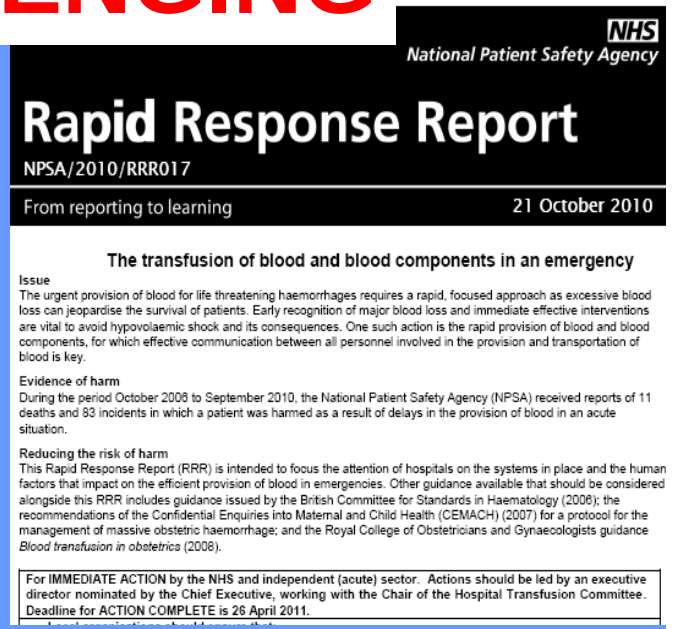


BUT IMPLEMENTATION HAS BEEN CHALLENGING







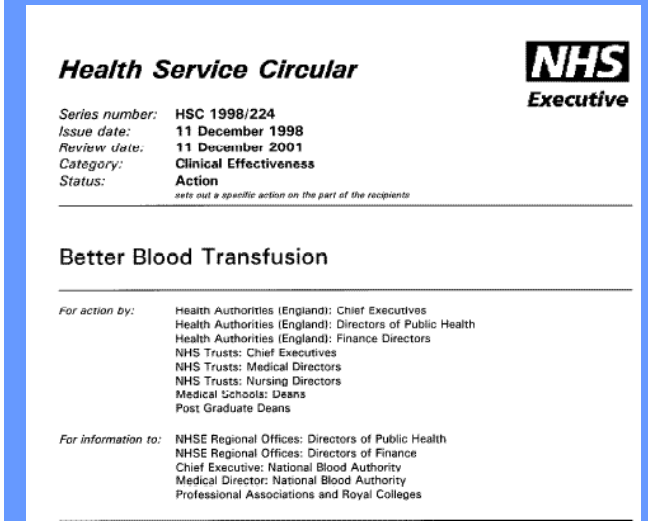
"Better Blood Transfusion"
1998, 2002 and 2007

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

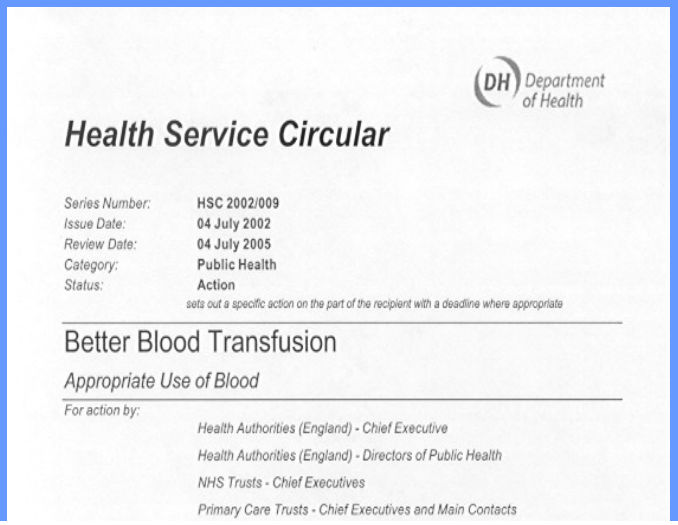
NHS Executive

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

Better Blood Transfusion

For action by:
Health Authorities (England): Chief Executives
Health Authorities (England): Directors of Public Health
Health Authorities (England): Finance Directors
NHS Trusts: Chief Executives
NHS Trusts: Medical Directors
NHS Trusts: Nursing Directors
Medical Schools: Deans
Post Graduate Deans

For information to:
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



DH Department of Health

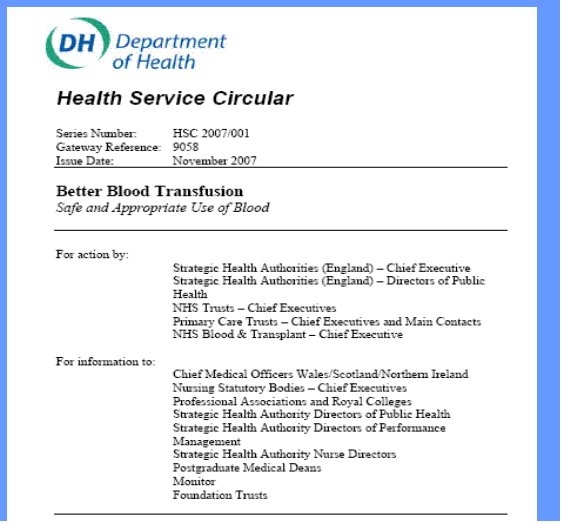
Health Service Circular

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

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

Health Service Circular

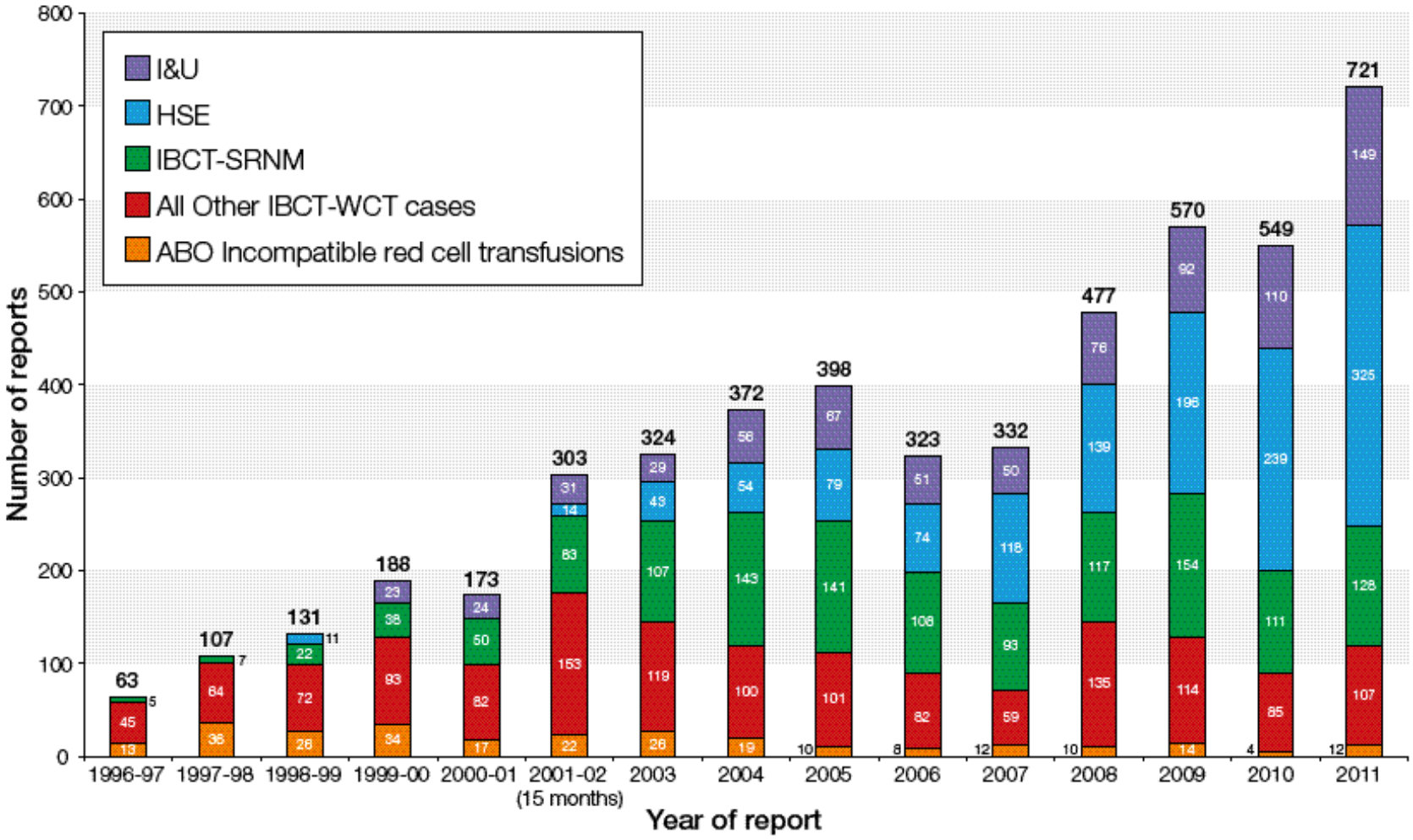
Series Number: HSC 2007/001
Gateway Reference: 9058
Issue Date: November 2007

Better Blood Transfusion
Safe and Appropriate Use of Blood

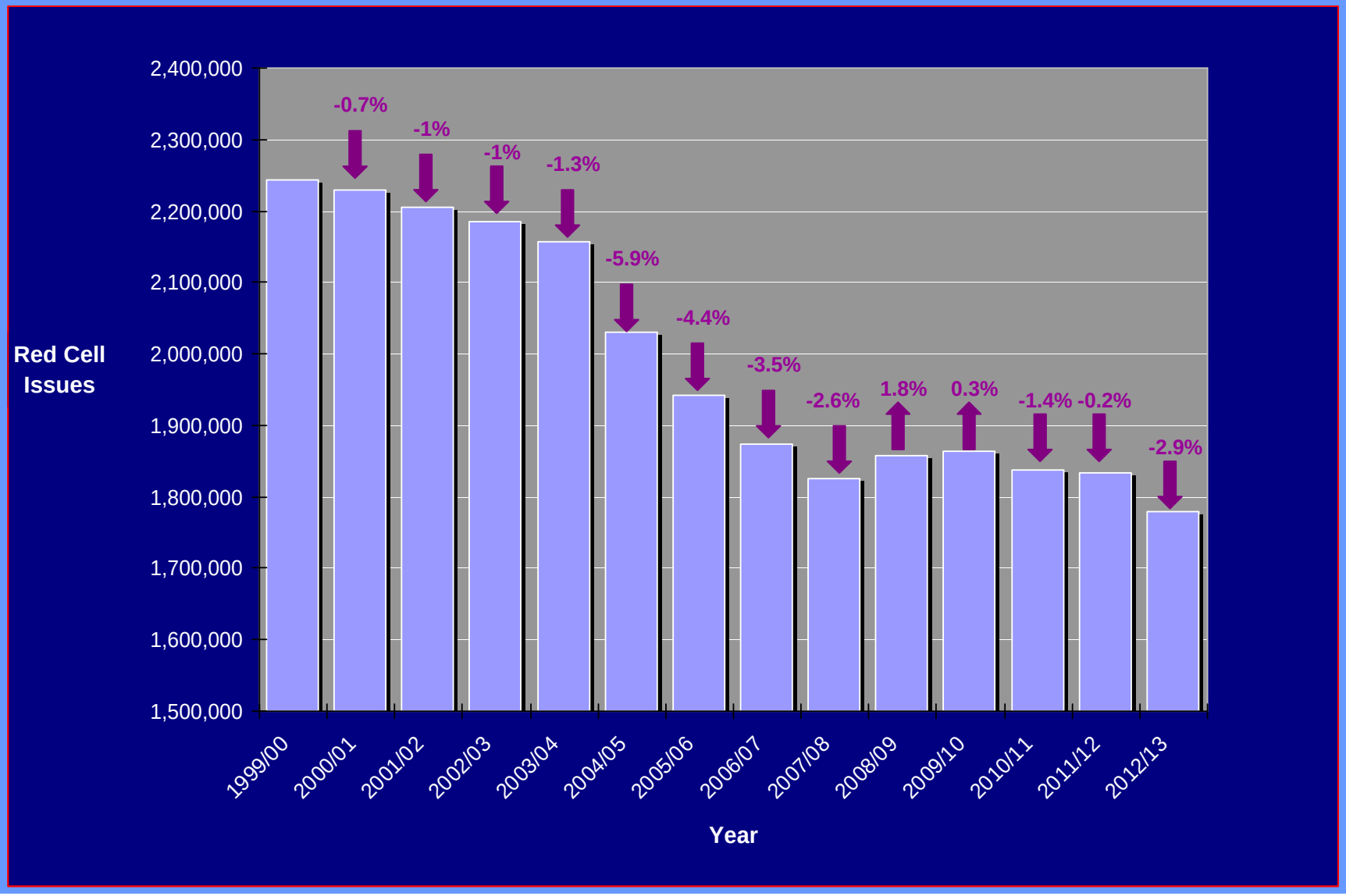
For action by:
Strategic Health Authorities (England) – Chief Executive
Strategic Health Authorities (England) – Directors of Public Health
NHS Trusts – Chief Executives
Primary Care Trusts – Chief Executives and Main Contacts
NHS Blood & Transplant – Chief Executive

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

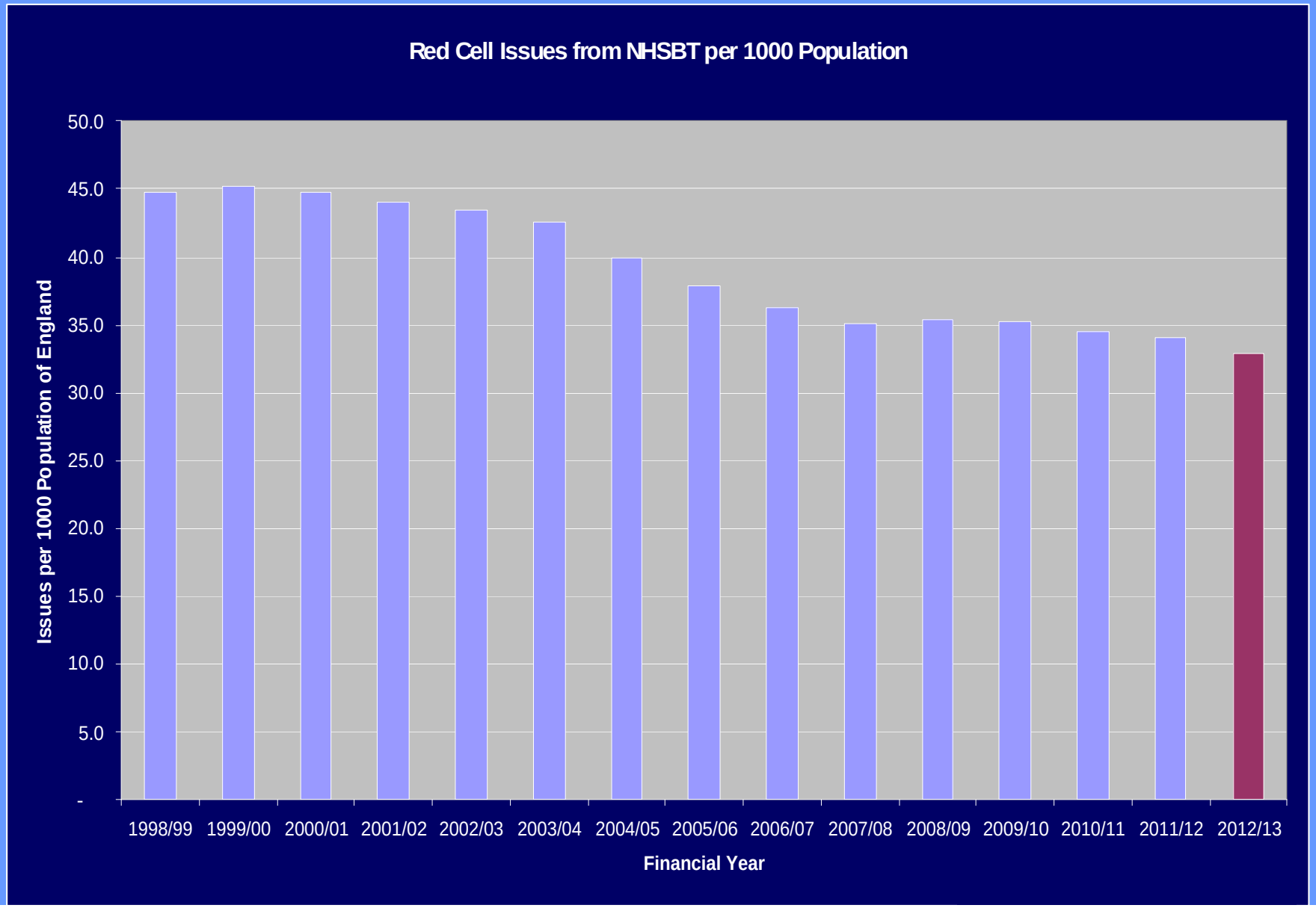
IBCT & ABO incompatible red cell transfusions (SHOT, 2011)



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

TABLE 3. Change in indications for transfusion between 1999 and 2000, 2004, and 2009, by broad specialty

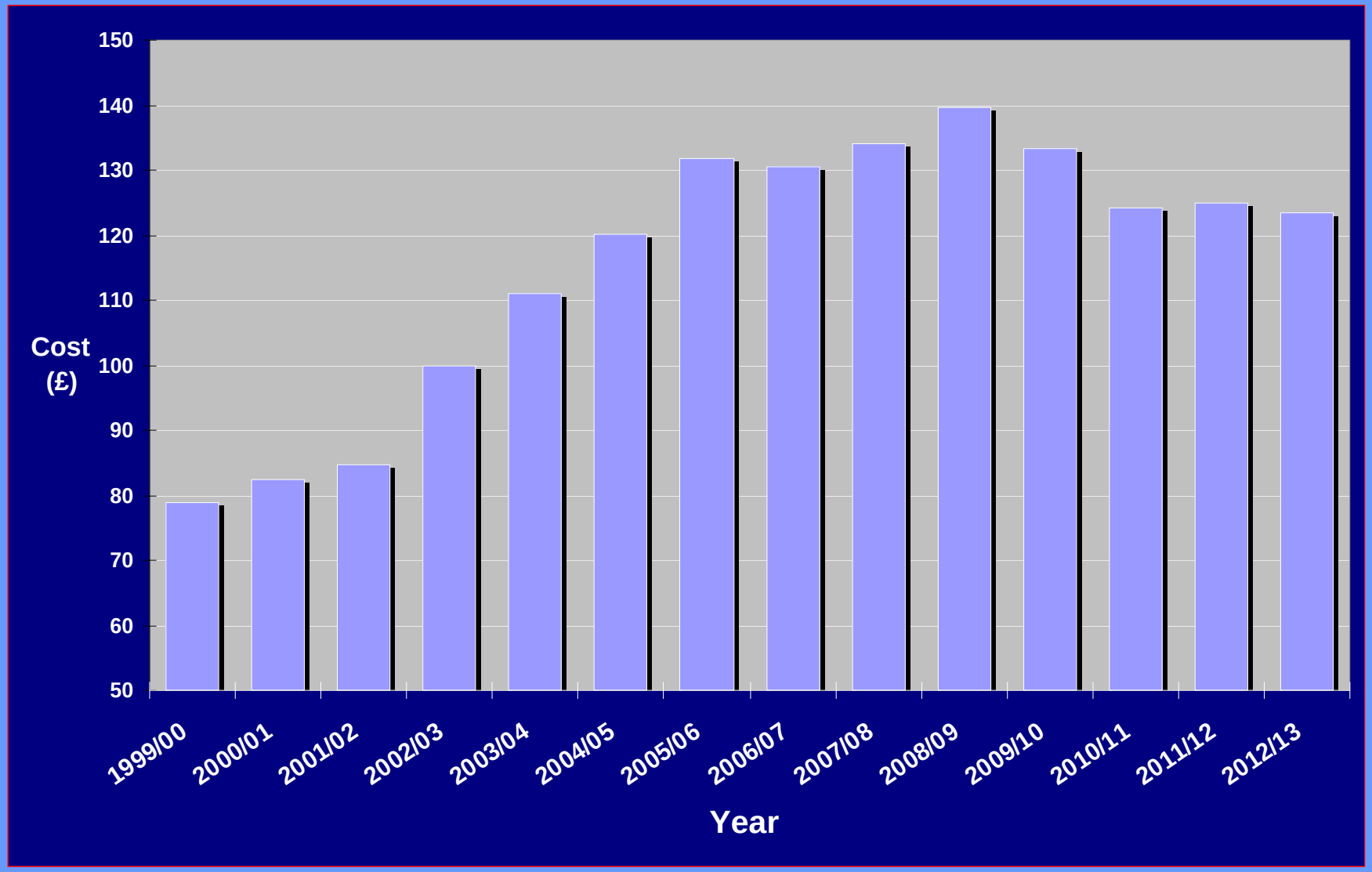
Specialty	1999 to 2000		2004		2009	
	Units transfused	Percentage of all blood transfused	Units transfused	Percentage of all blood transfused	Units transfused	Percentage of all blood transfused
Medical	5047	52	5558	62	5156	64.2
Surgical	3982	41	3001	33	2360	29.4
Obstetrics/gynecology	812	8	444	5	509	6.4
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).

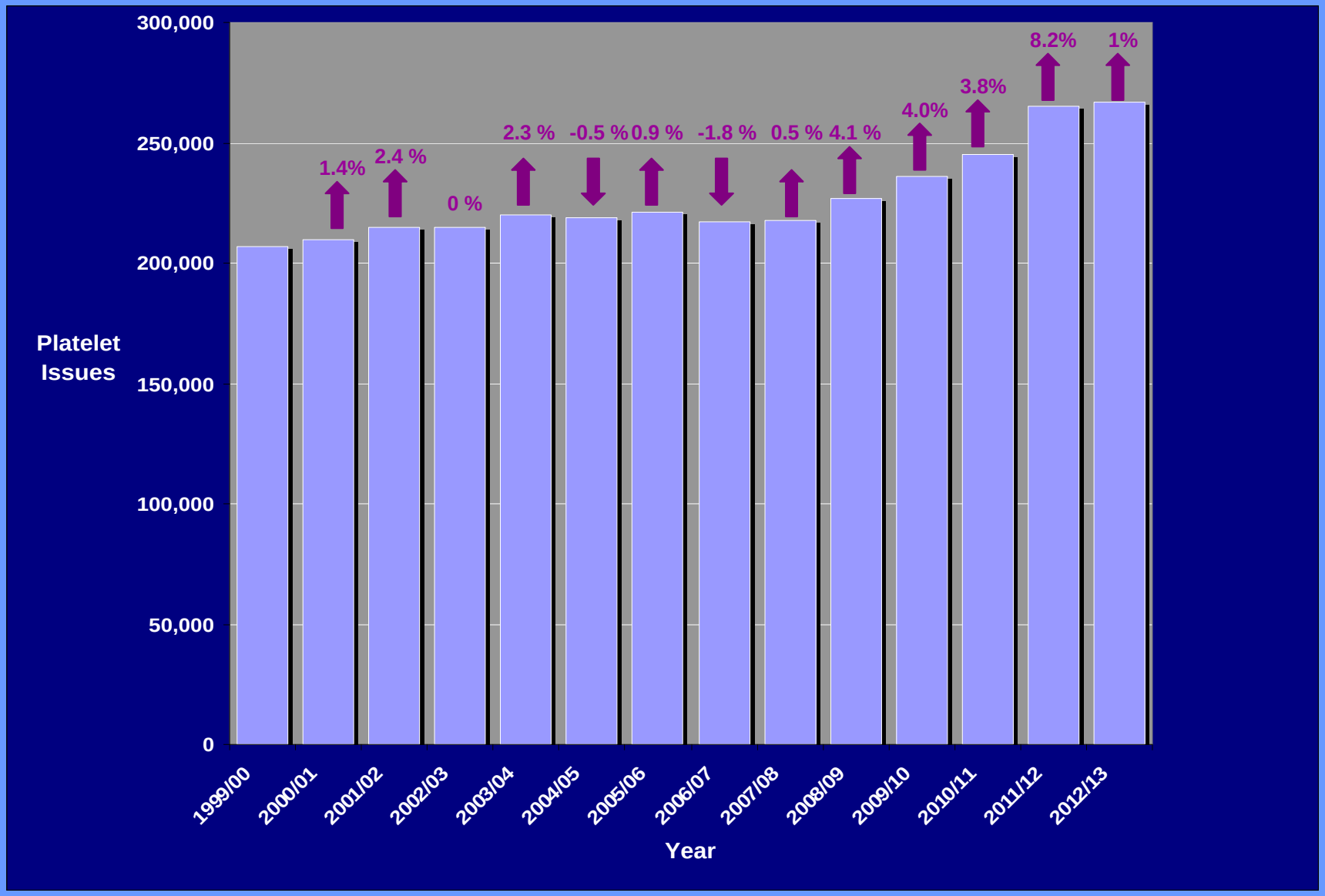
Possible reasons for reduction in red cell transfusion

- *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?

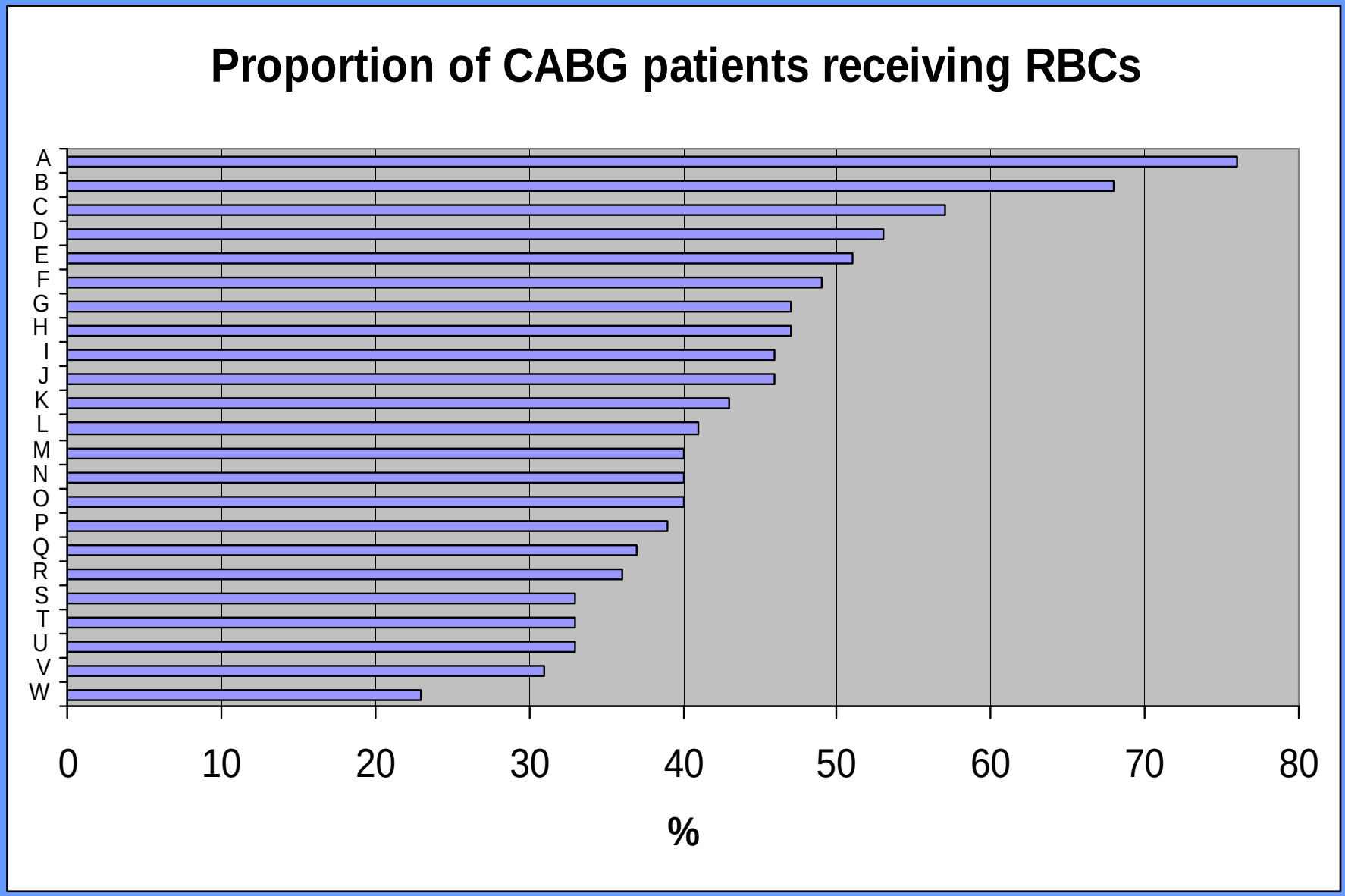
- National, regional and local audits consistently show inappropriate use of 15-20% red cells and 20-30% platelets/plasma
- Low uptake of methods to avoid use of blood
- Safety of hospital transfusion still an issue
- Poor education and training
- Lack of patient involvement
- Evidence base getting stronger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

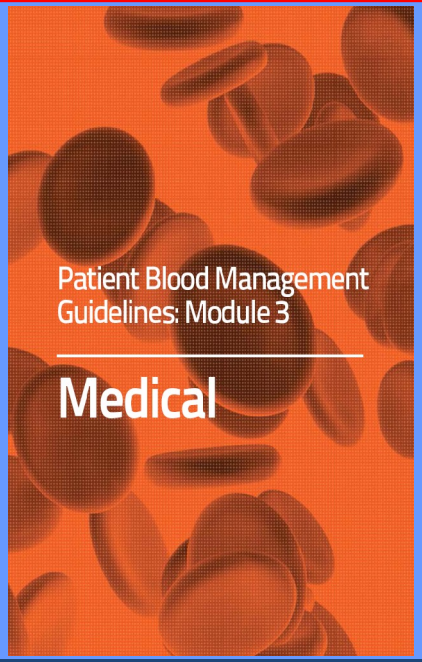
Summary of the inappropriate use of blood from large regional and national audits of blood use

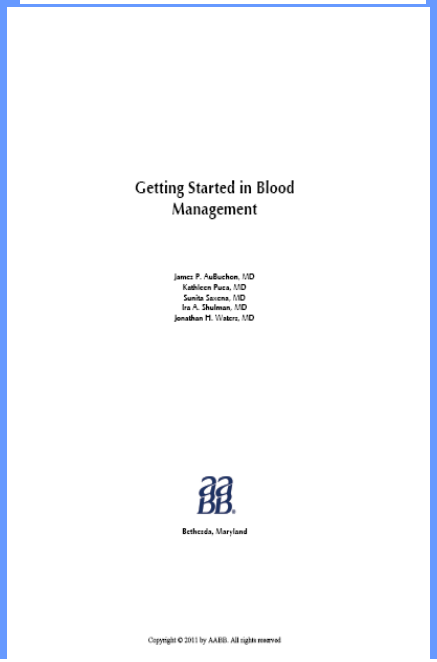
Audit	Year	Number of Hospitals	N cases audited	Inappropriate use	Guideline Standard
Red cell transfusion	2002	All 13 hospitals in N. Ireland	360	19% of patients inappropriately transfused and 29% over-transfused	British Committee for Standards in Haematology (BCSH) (2001)
Red cells in hip replacement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

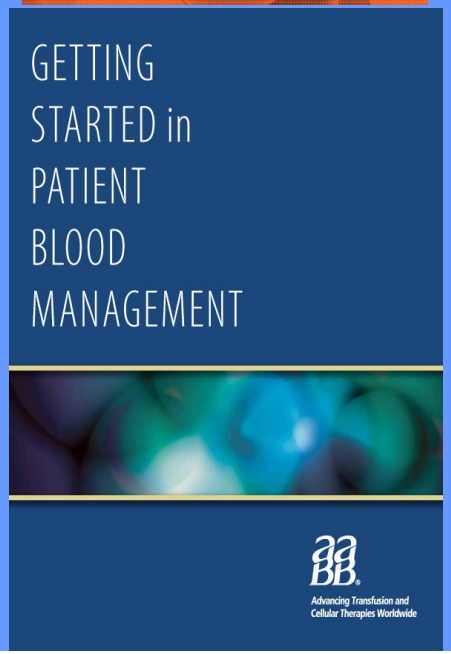
National audit of blood use in cardiac surgery, 2011



Patient Blood Management (PBM)







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?**
- **Provide feedback to clinicians**
- **Provide 'decision support'**

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:

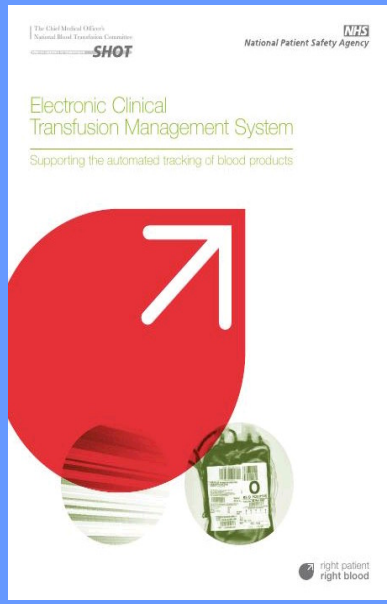
- Nursing time (£500k/year)
- Transfusion laboratory staff time (£20k/year)
- Staff and time for meeting regulatory requirements and for training (£20k/year)

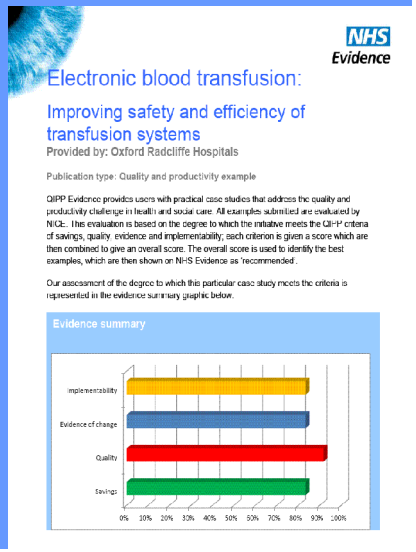
Cash releasing savings:

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

Compares well with some transfusion safety measures

http://www.evidence.nhs.uk/qipp





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**

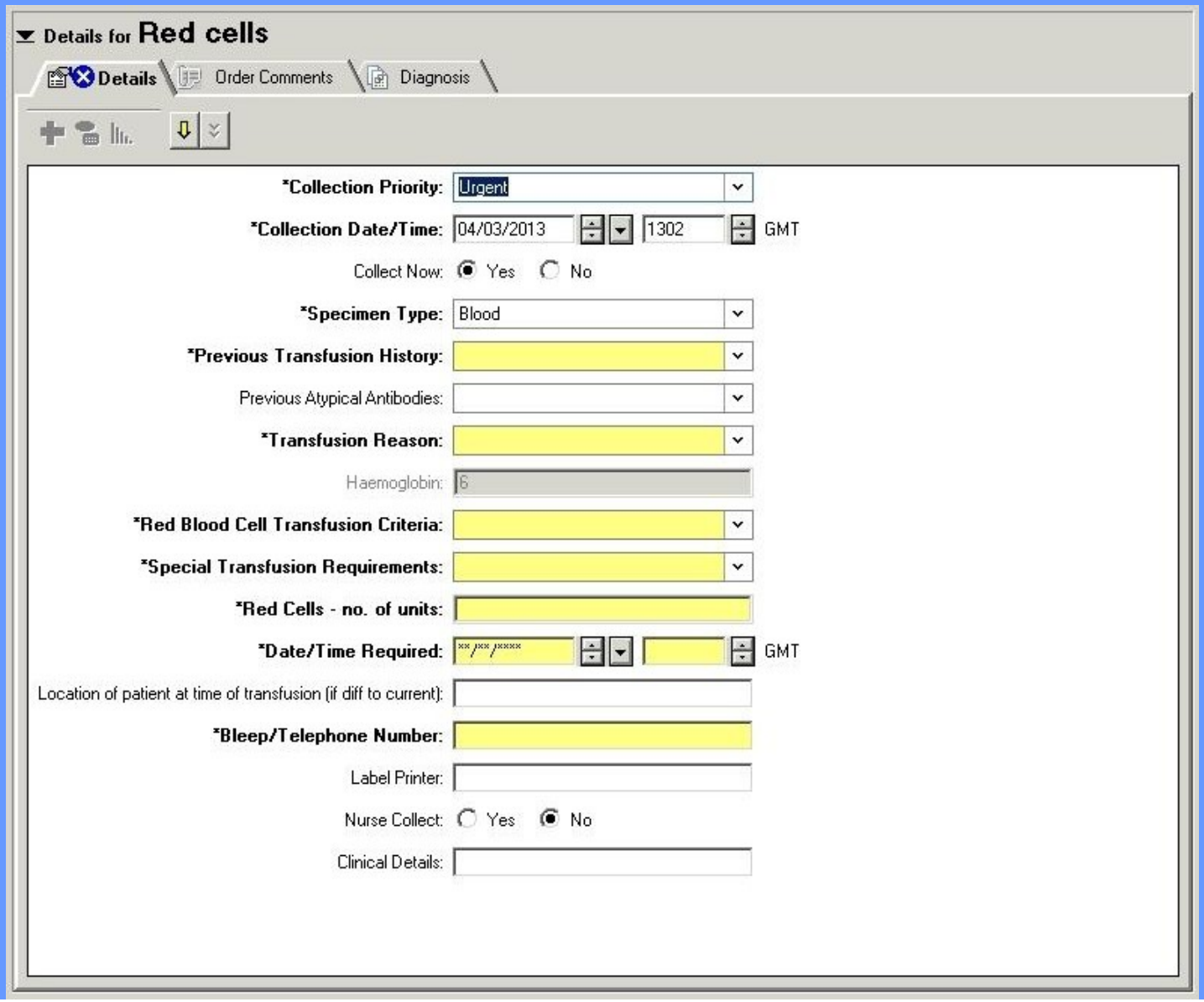
National implementation of electronic transfusion systems

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

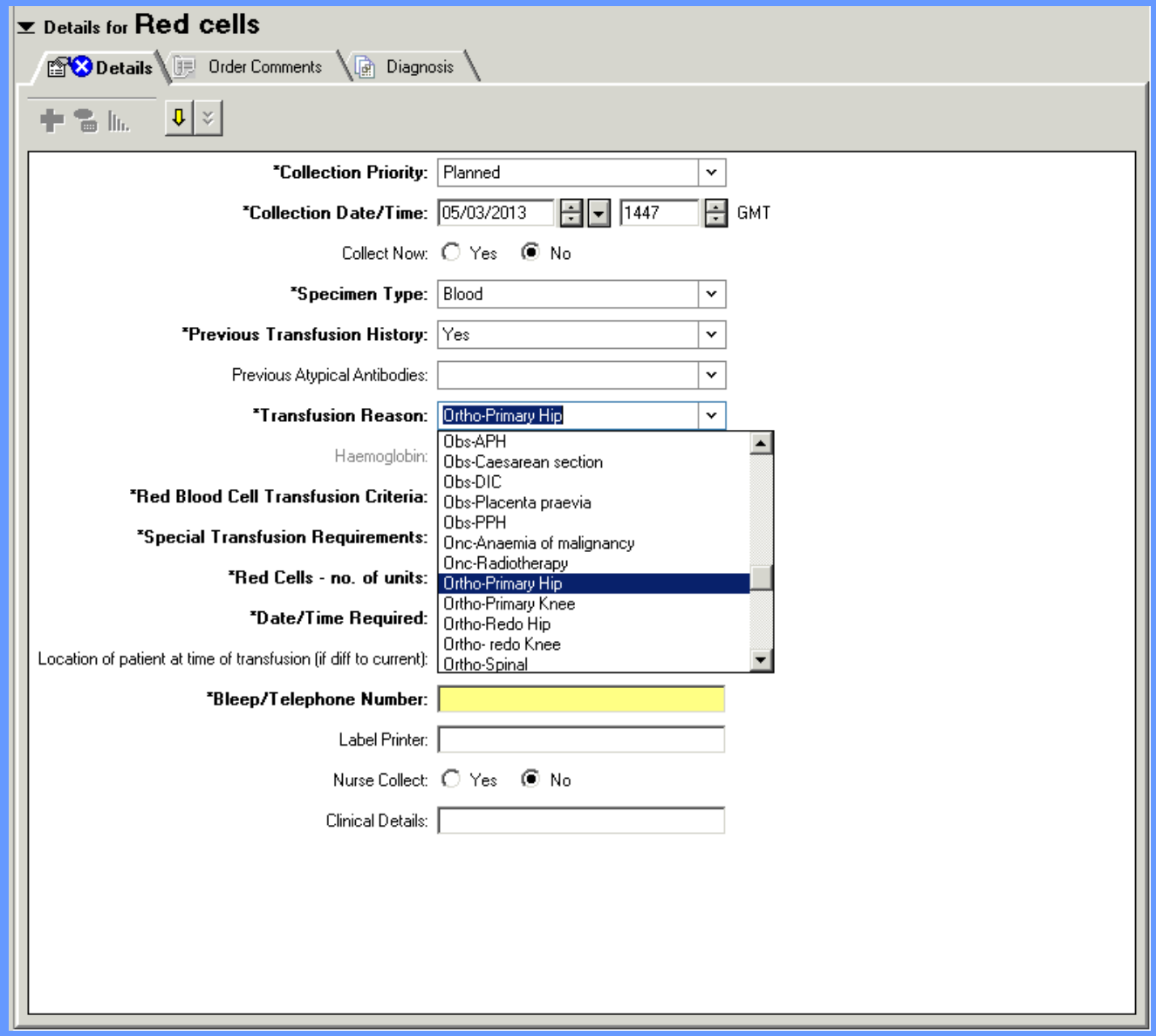
Data from surveys of hospitals in England by the National Blood Transfusion Committee

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

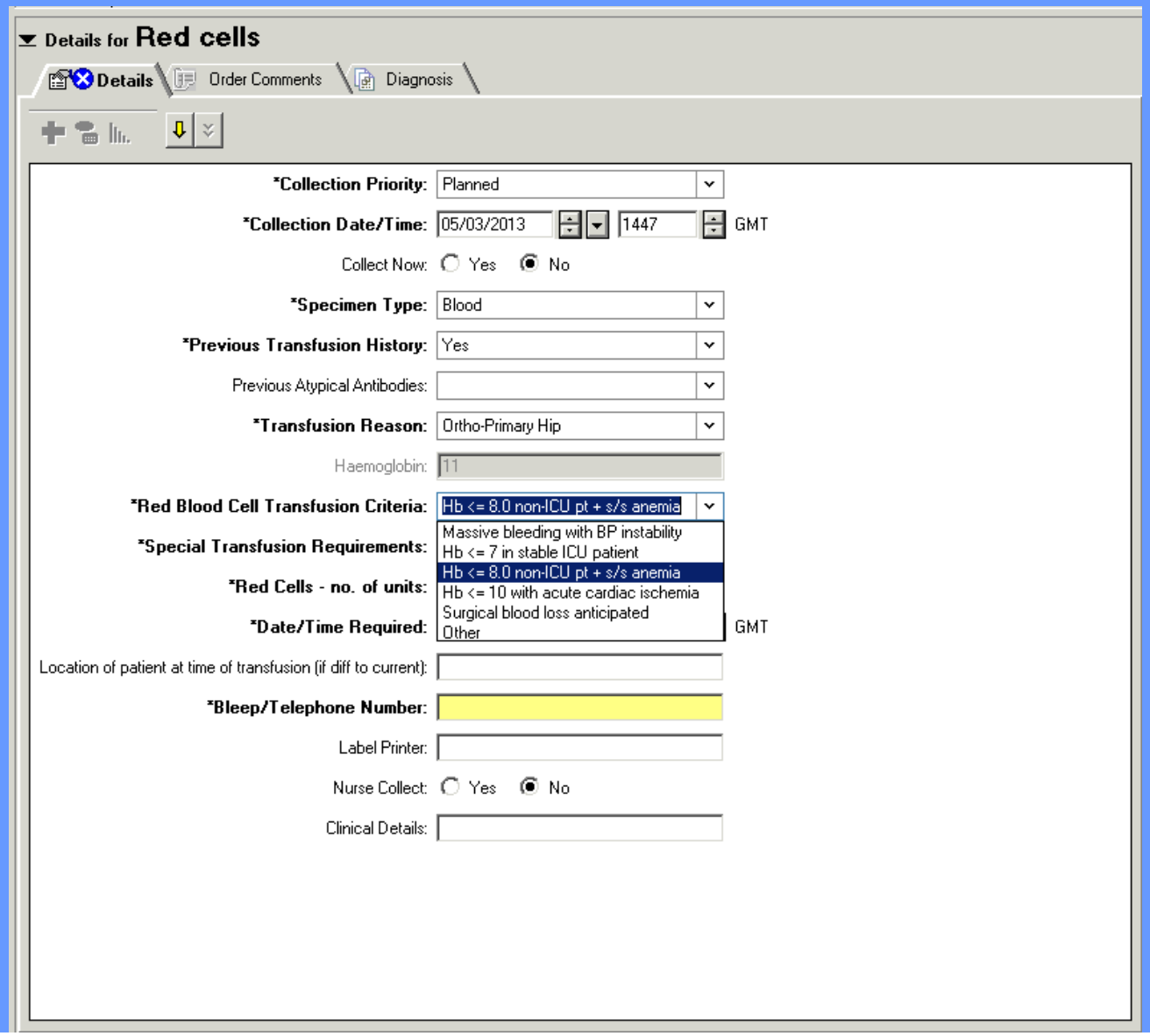
Blood ordering process using EPR



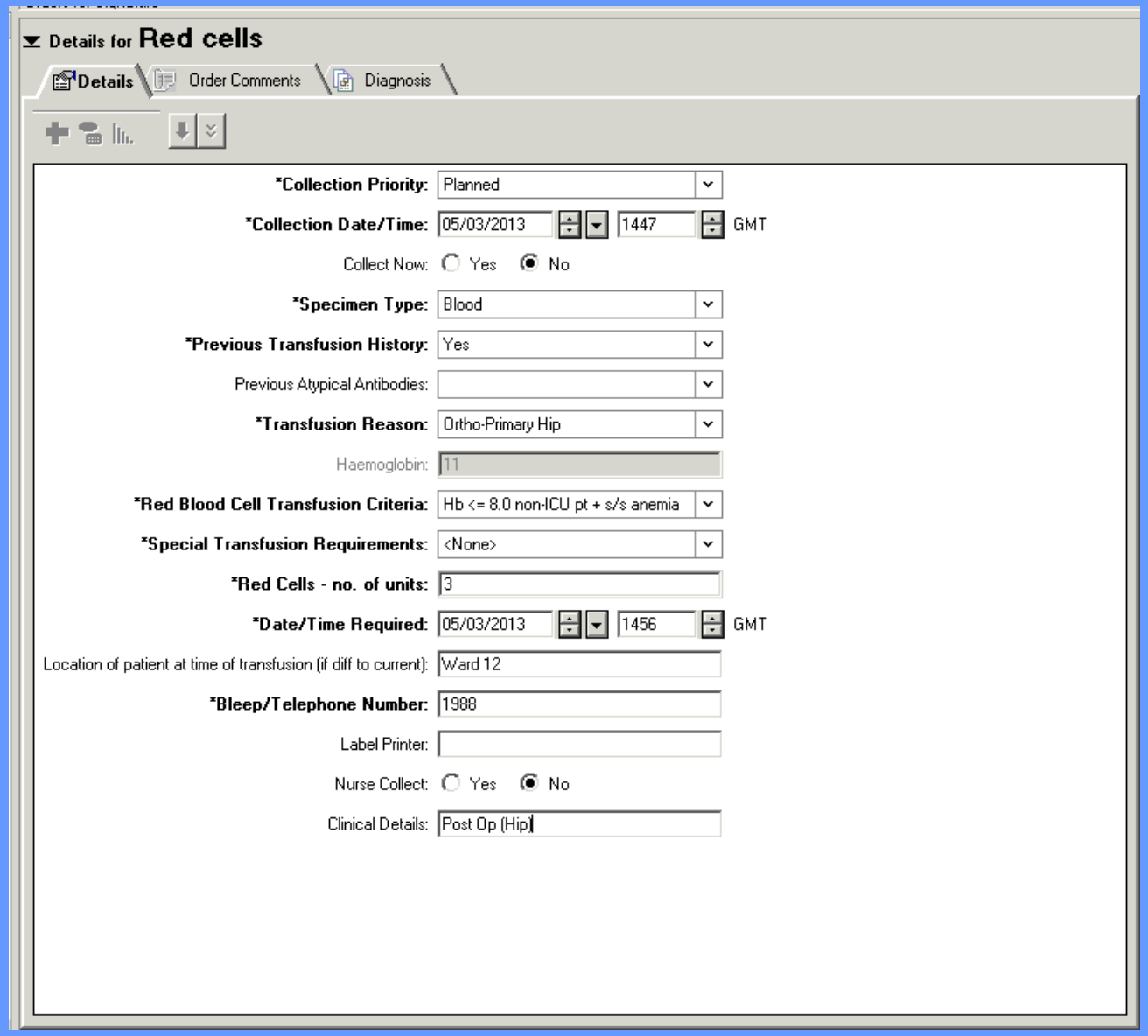
Select clinical reason for transfusion



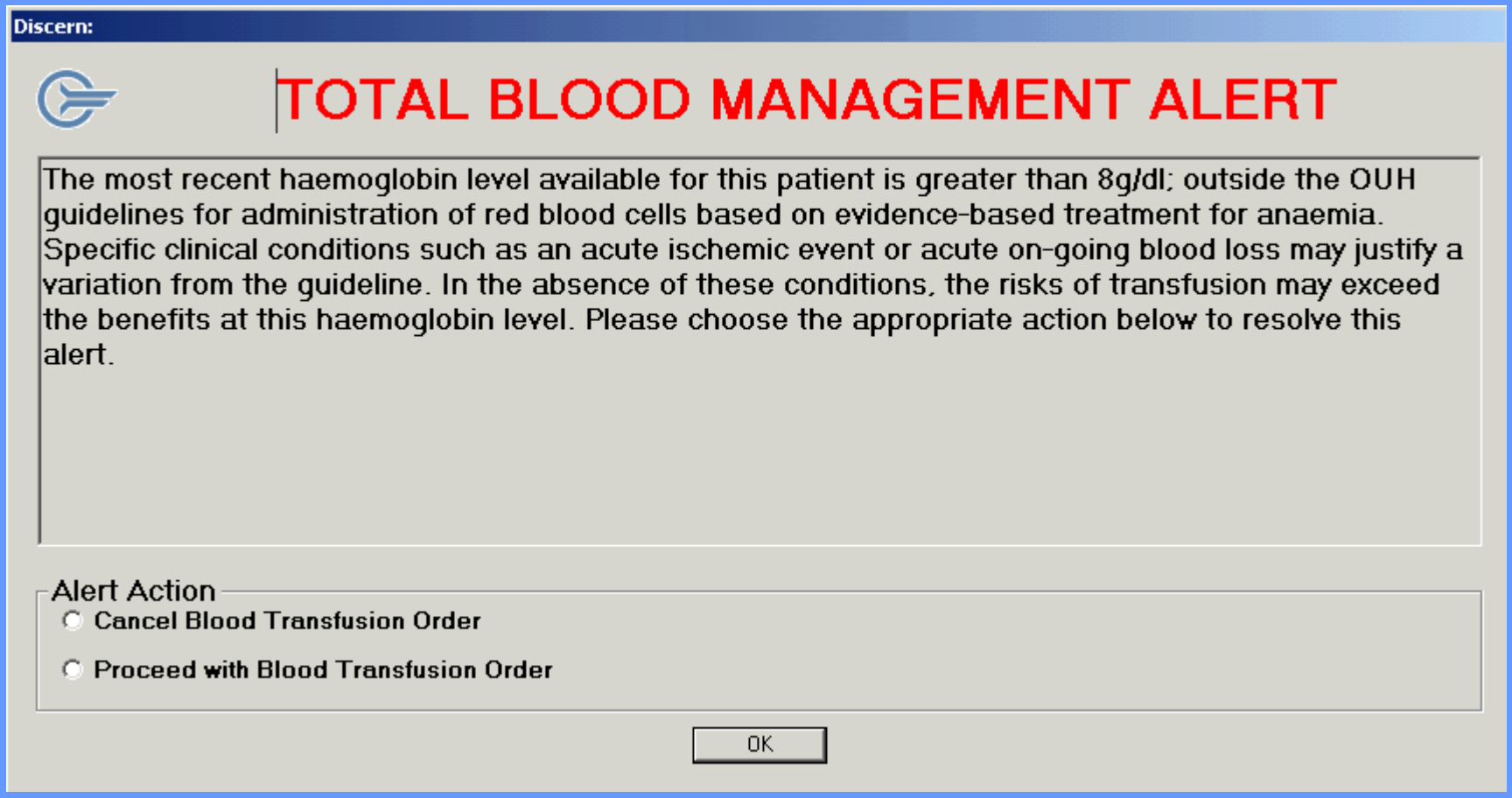
Select specific criteria for transfusion



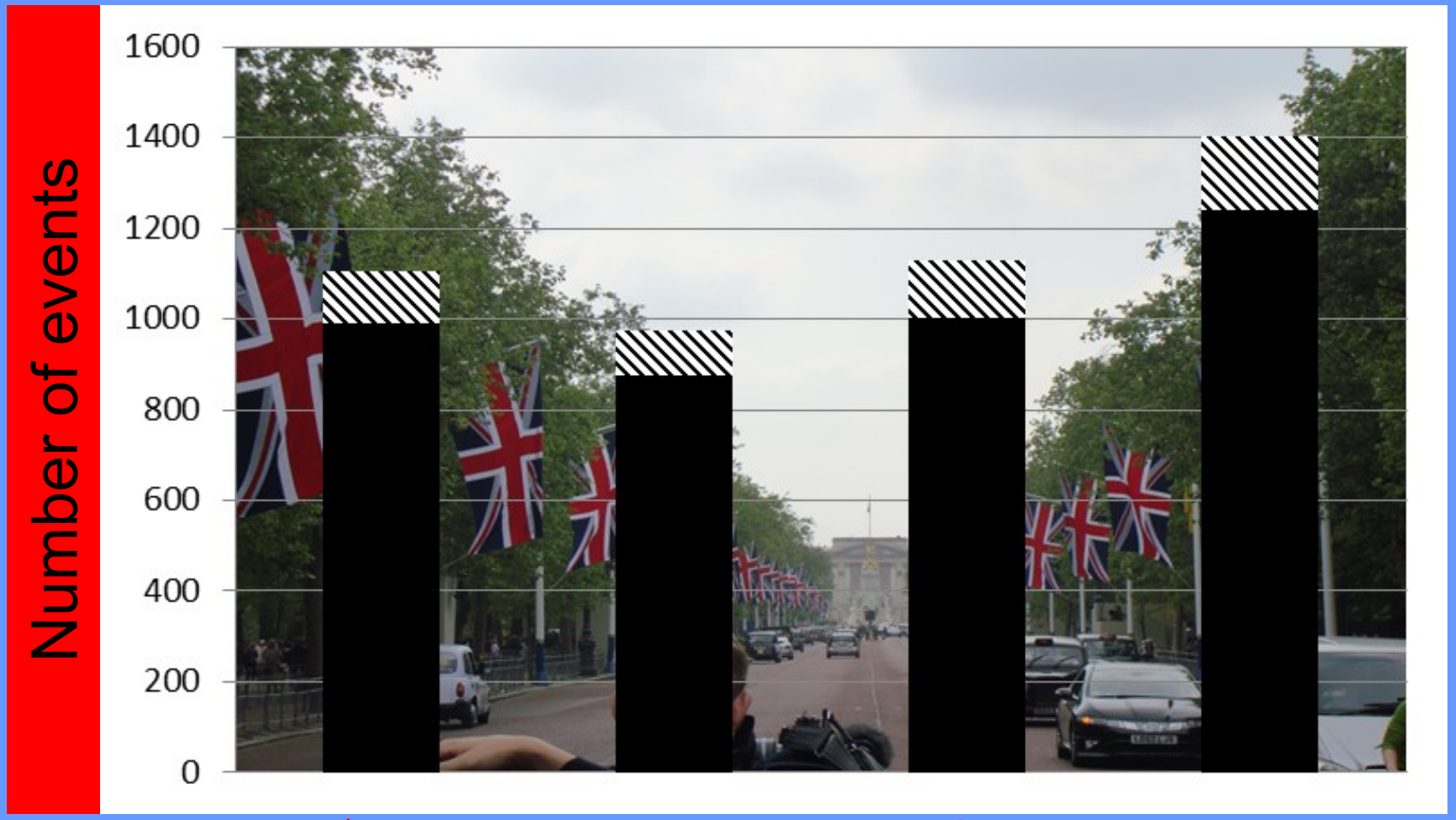
Complete number of units, time etc



Alert if criteria for appropriate transfusion not met

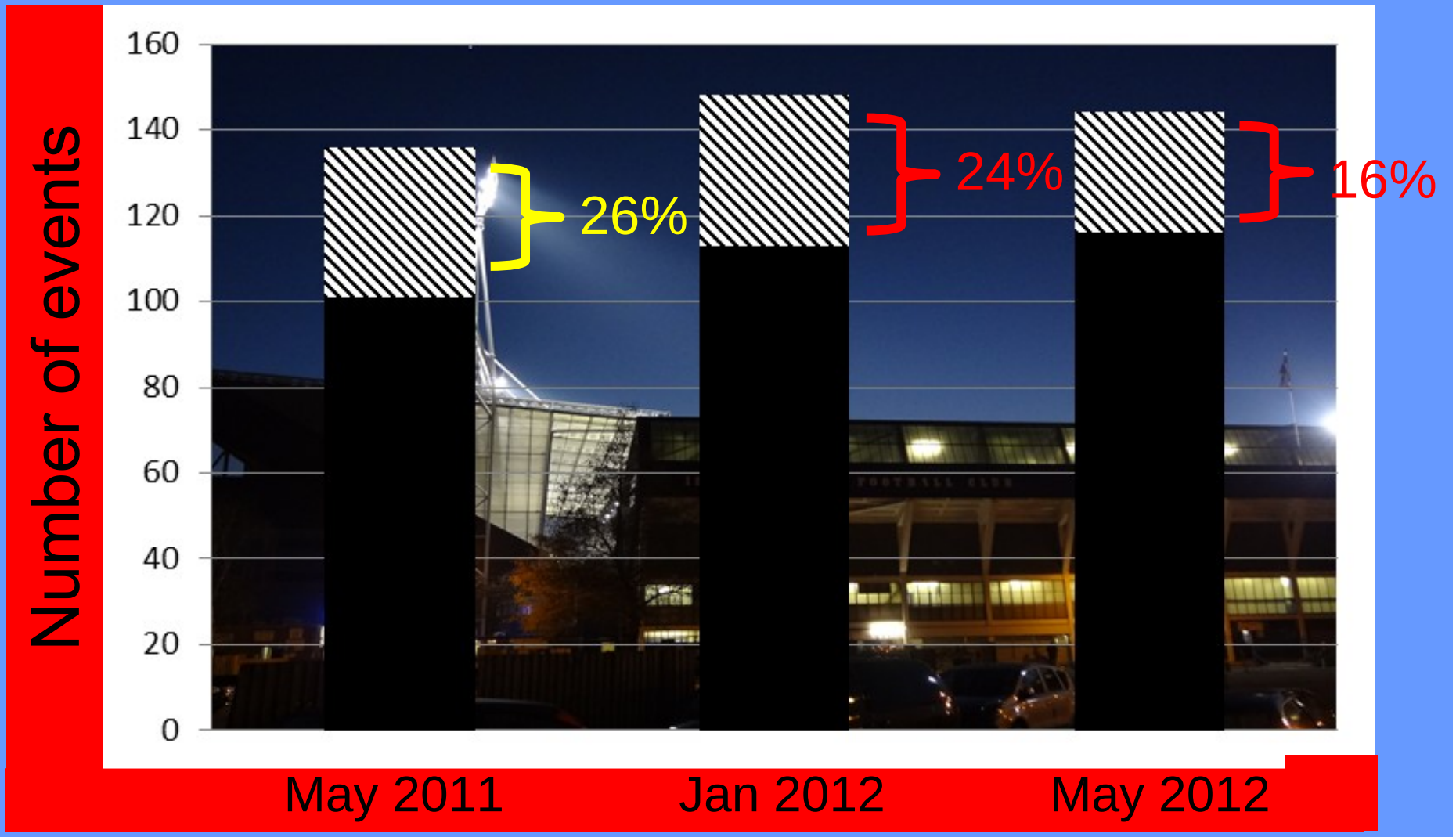


Effectiveness of RBC alert – about 10%



Thanks to Mark Yazer, Pittsburgh

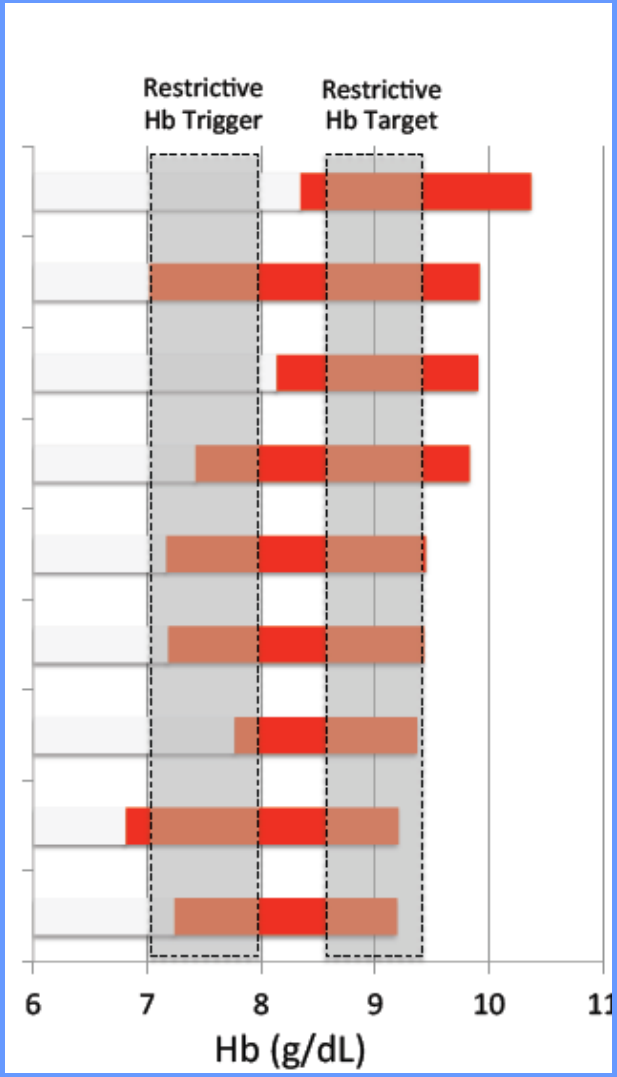
Effectiveness of plasma alert



Thanks to Mark Yazer, Pittsburgh

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