Pre-operative Optimisation

London RTC
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Clinical lead for Pre-Assessment
Leeds Teaching Hospitals

- BCSH guidelines
- Leeds Teaching Hospitals
- Vifor Pharma – Conference attendance 2010
- No objections to transfusion

There is a mandate for PBM

SIXTY-THIRD WORLD HEALTH ASSEMBLY **WHA63.12**

Agenda item 11.17 **21 May 2010**

Availability, safety and quality of blood products

The Sixty-third World Health Assembly,

Recalling resolution WHA58.13 on blood safety: proposal to establish World Blood Donor Day

…and the mandate includes pre-operative optimisation

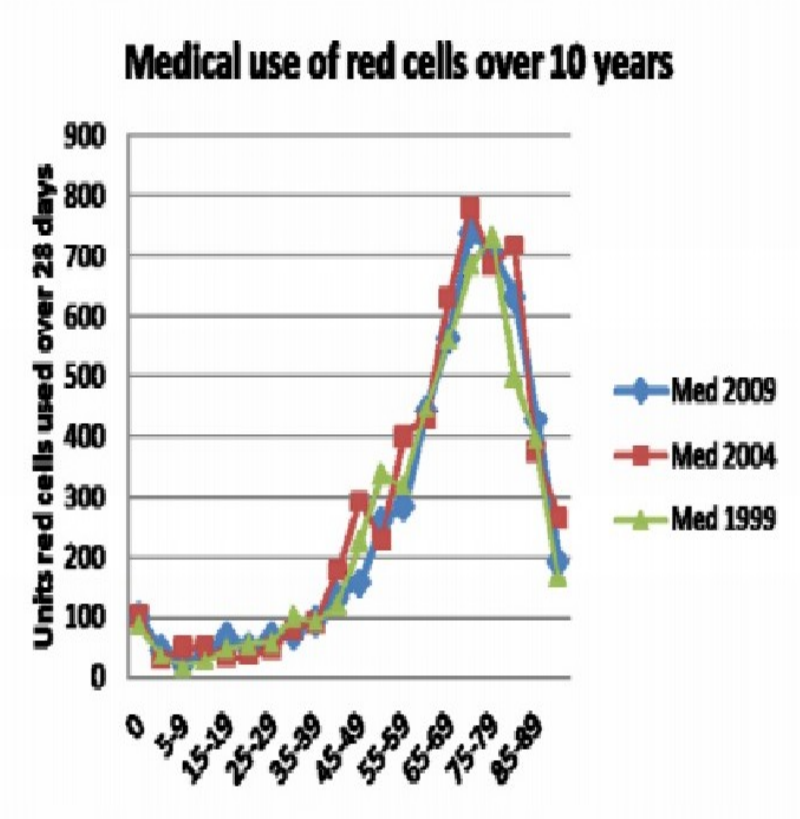
Bearing in mind that voluntary and non-remunerated blood donations can contribute to high safety standards for blood and blood components, and being aware that the safety of blood products depends on testing of all donated blood for transfusion-transmissible infections, and correct labelling, storage and transportation of blood products;

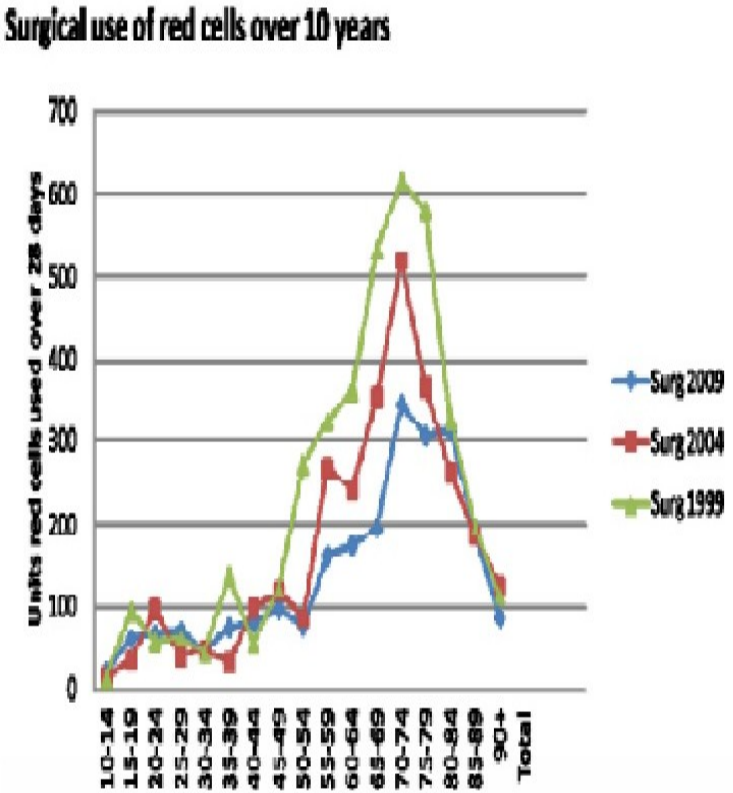
Bearing in mind that patient blood management means that before surgery every reasonable measure should be taken to optimize the patient's own blood volume, to minimize the patient's blood loss and to harness and optimize the patient-specific physiological tolerance of anaemia following WHO's guide for optimal clinical use (three pillars of patient blood management);

Recognizing that excessive and unnecessary use of transfusions and of plasma-derived medicinal products, unsafe transfusion practices, and errors (particularly at the patient's bedside) seriously compromise patient safety;

Concerned that unsafe and/or poor-quality blood products can render patients vulnerable to avoidable risk if the blood programmes are not subject to the level of control now exercised by

What's the problem?





- Pre-operative anaemia predictive of

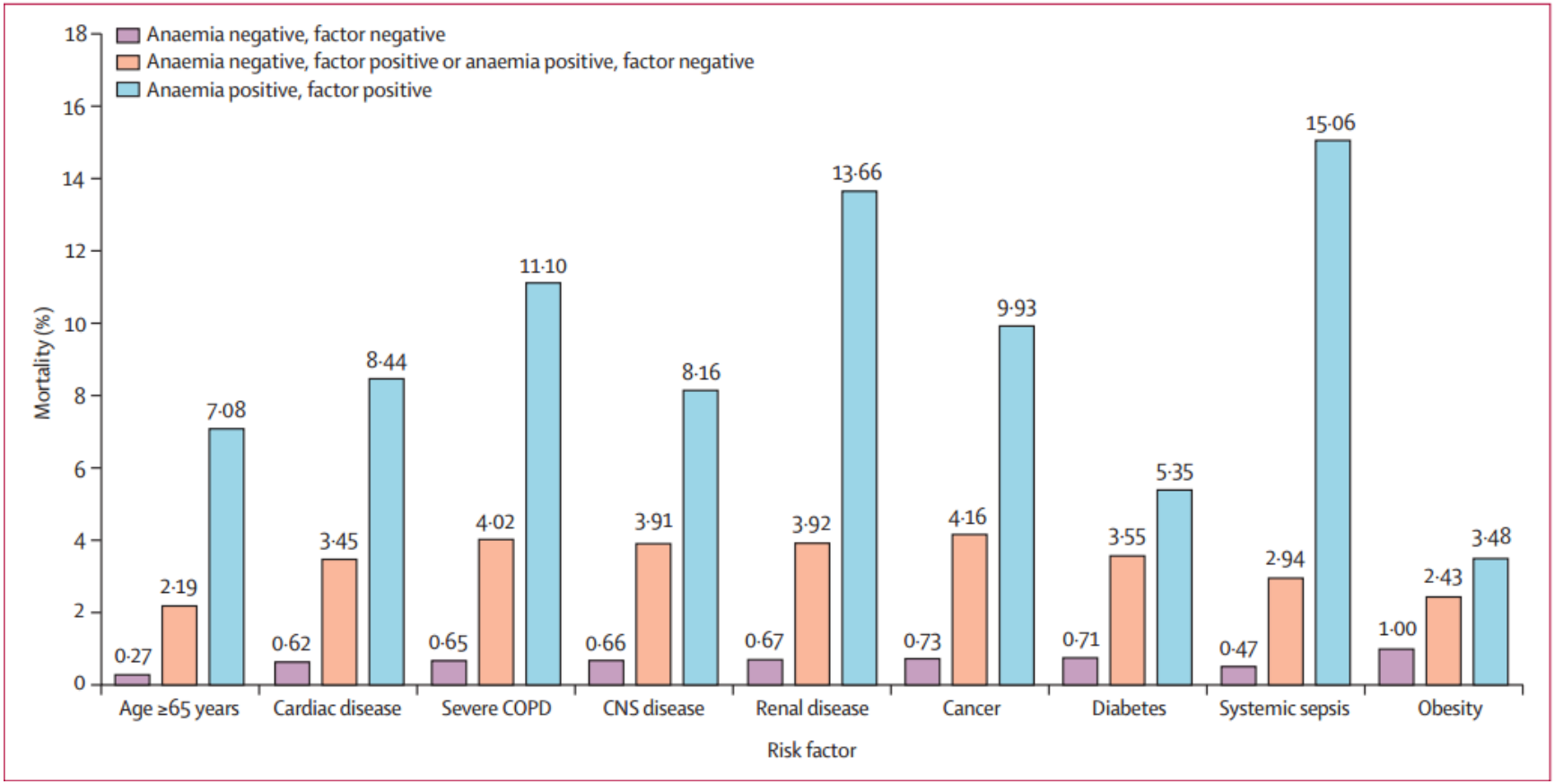
  - Transfusion rate
  - Length of stay
  - Patient satisfaction

- Peri-operative anaemia predictive of:

  - Mortality, Stroke and ACS
  - Falls & Fractures
  - Reduced quality of life

Husted H et al. Acta Orthopaedica 2008; 79 (2): 168–173
Shander A et al. Am J Med. 2004;116(7A):58S–69S
Conlon NP et al. Anesth Analg 2008;106:1056 –61

Anaemia and outcomes in noncardiac surgery

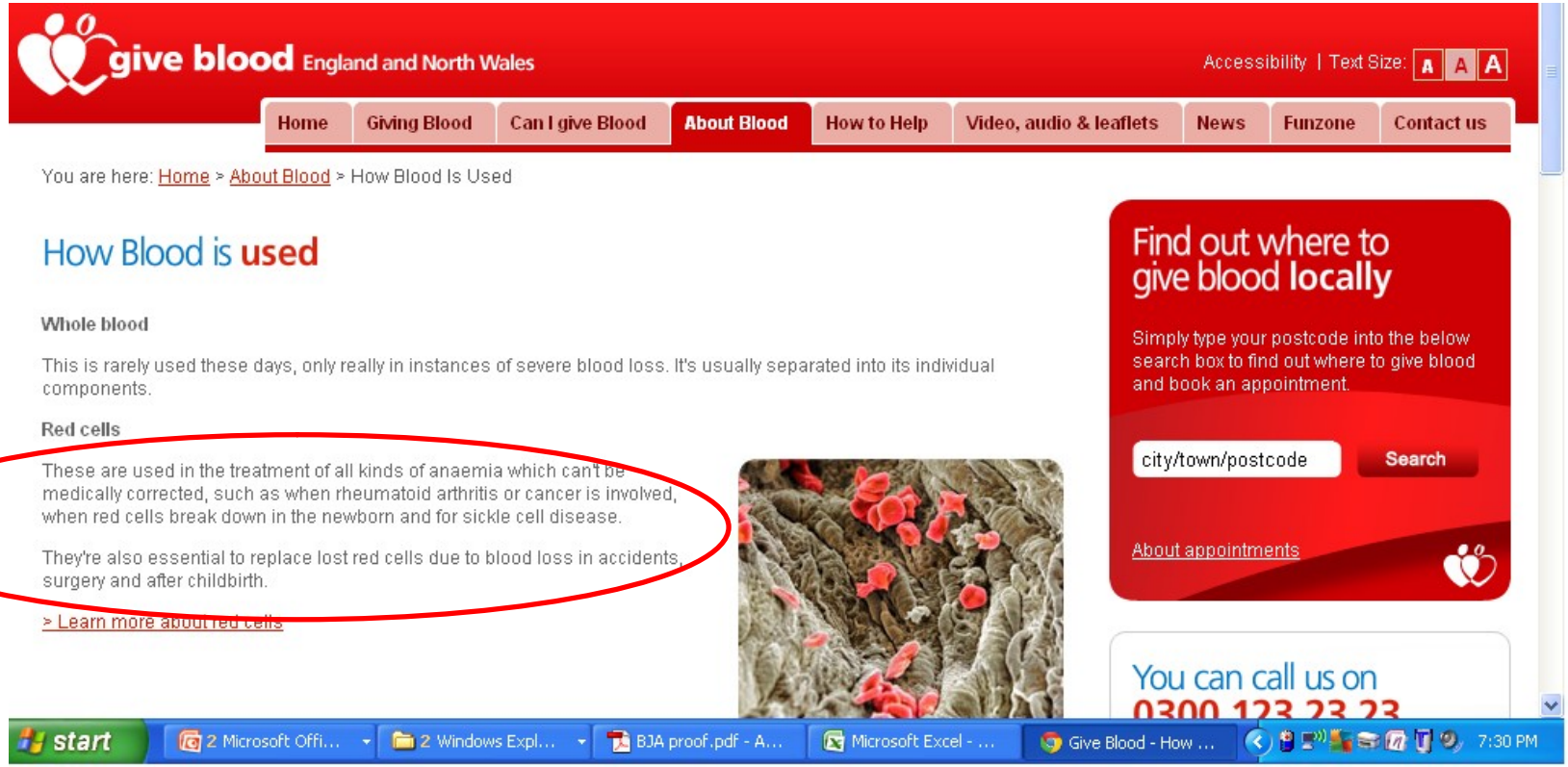


Evidence variability (2)

- Blood transfusion predictive of mortality in:
  - Cardiac Surgery
  - Liver Transplantation
  - Intensive Care
  - Acute Coronary Syndrome treatment
  - **Arthroplasty**
- Propensity scoring suggests **need** for transfusion and **transfusion itself** act independently

Kulier A et al. Circulation 2007; 116:471–9
Salim A et al. J Am Coll Surg 2008; 207:398–406
Herbert PC et al. N Engl J Med 1999; 340:409–17
Rajesparan K et al. *J Bone Joint Surg [Br]* 2009;91-B:776-83

Donor perspective



Donor perspective

Video | TV Ads | Radio Ads

An Ambitious Organisation

Play ▸

Journey of Blood

Play ▸

NHSBT Thank You

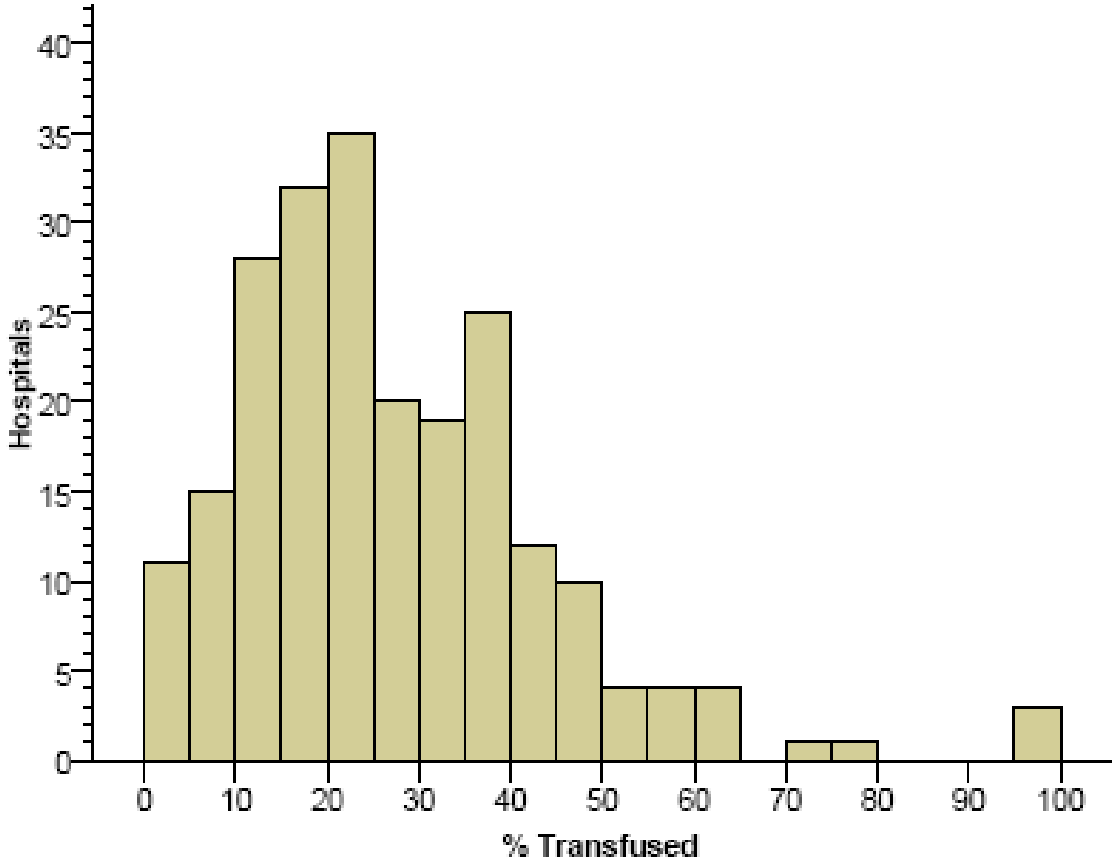
Play ▸

Rationale for Programme

- Elective orthopaedic surgery uses around 10% of national blood stocks
  - Consistent over last 10 years
  - Steadily rising number of procedures
  - All-cause massive transfusion 7% (Leeds/Bradford 2006)
- 2007: "Better blood transfusion" (HSC 2007/001)
- 2007: NHSBT National comparative audit

Scottish Arthroplasty Steering Committee (2009). Scottish Arthroplasty Project Annual Report 2009
Wells AW, et al. B*MJ*; 2002 325:803
Boralessa H et al. *Annals of the Royal College of Surgeons of England*; 2009: 91(7):599-605.
Rose AH et al, Vox Sanguinis 2009

Hospital variation histogram for the percentage of audit patients transfused

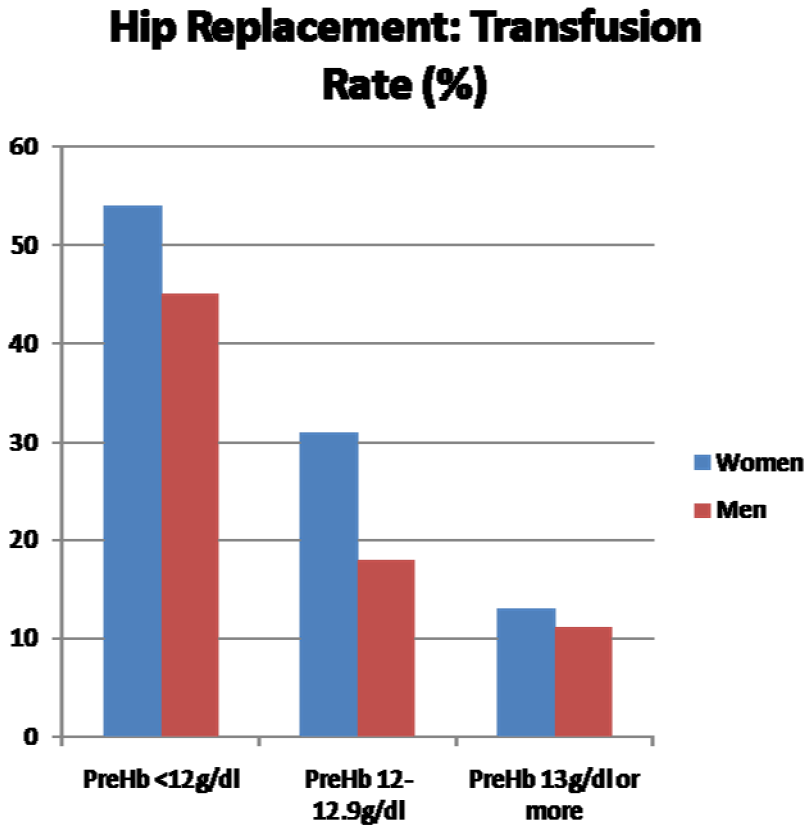


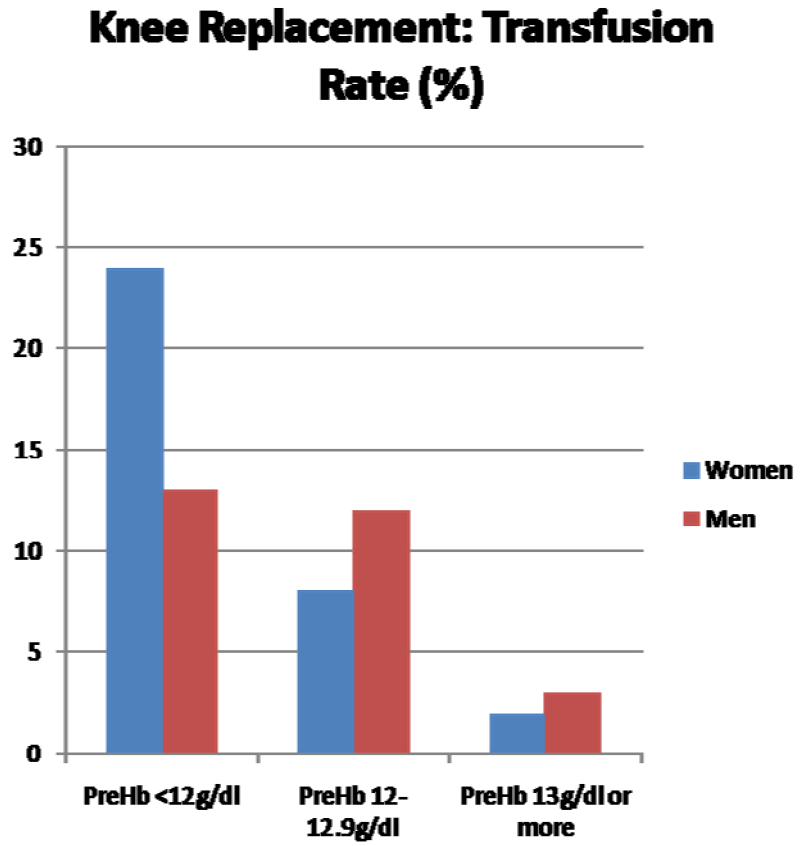
Boralessa H et al. *Annals of the Royal College of Surgeons of England*; 2009: 91(7):599-605.

Programme Stages

- Examine local associations between anaemia, transfusion & outcome
- Agree pathway
- Monitor implementation

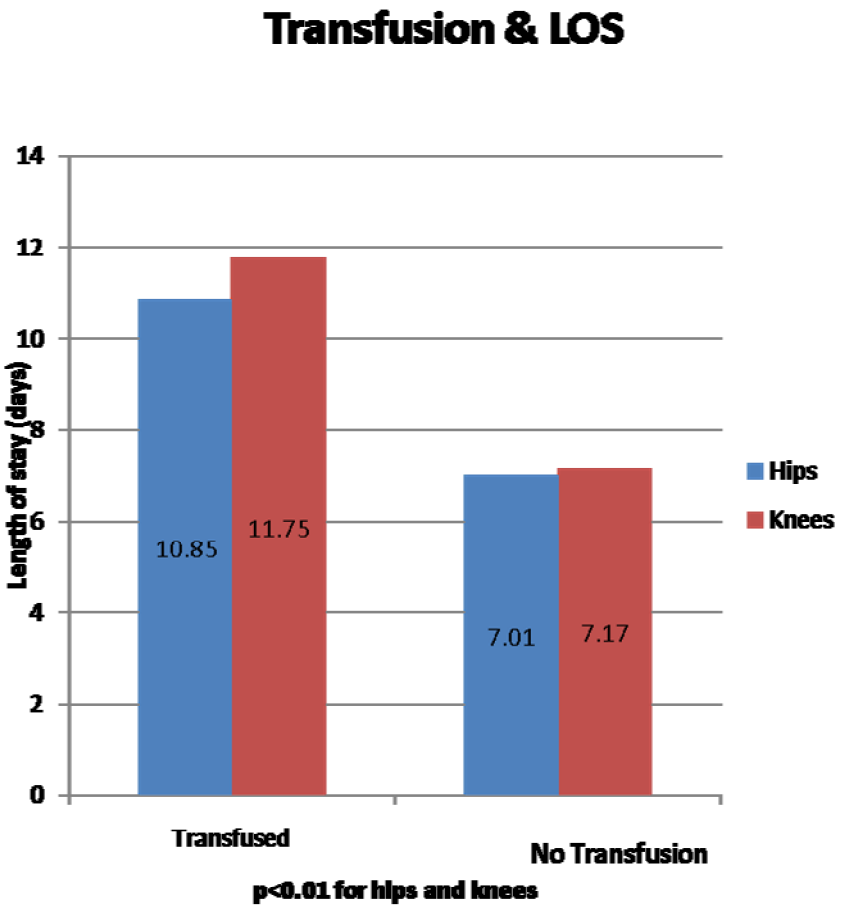
The ANHSFT Project: Local associations

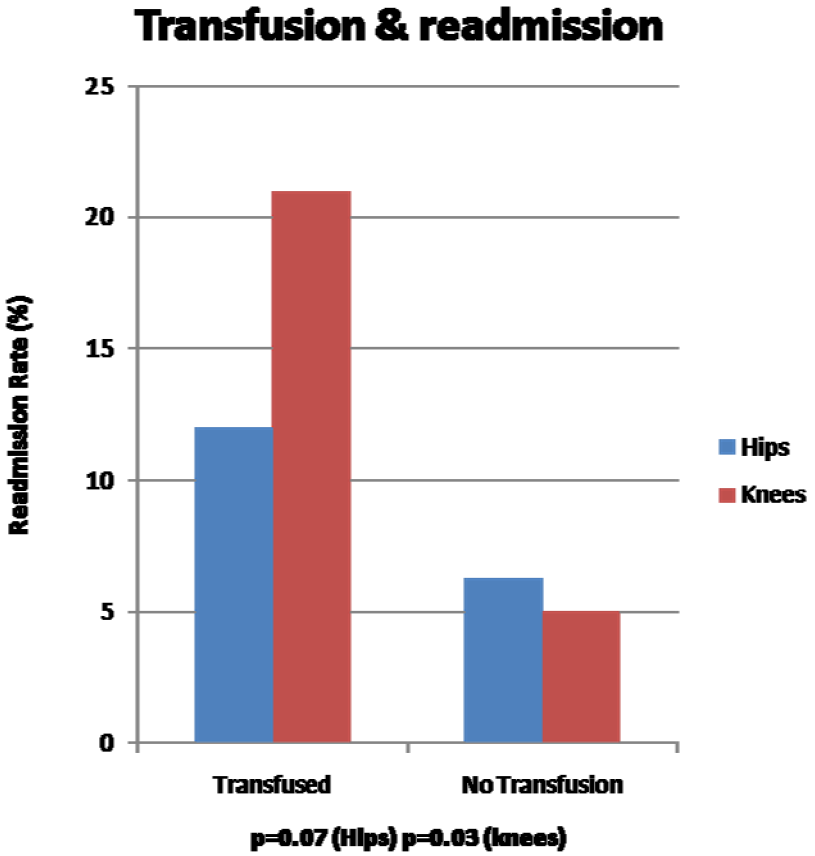




- p<0.001 for THR and TKR (accounting for age, gender, surgeon, ASA score)

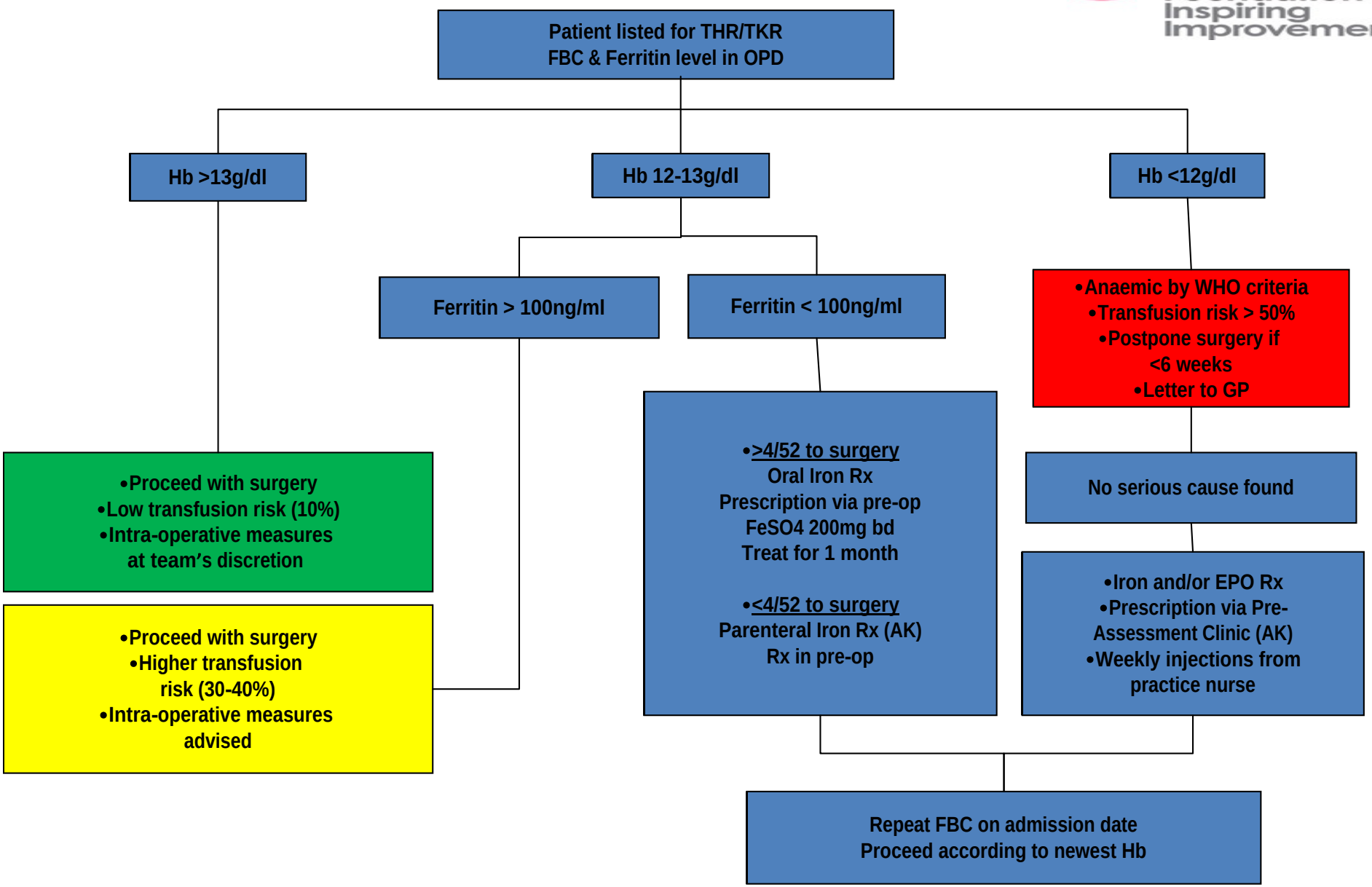
The ANHSFT Project: Local associations



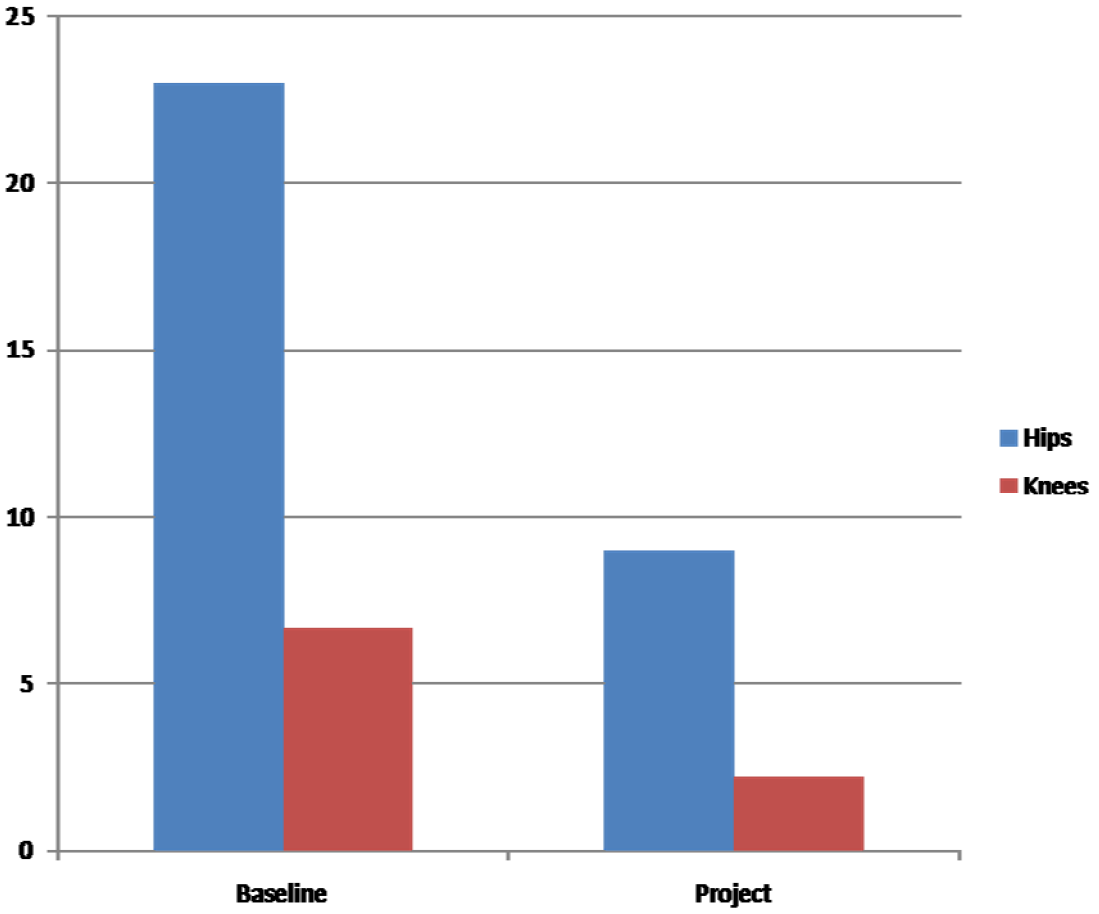


Airedale NHS Foundation Trust

The Health Foundation Inspiring Improvement



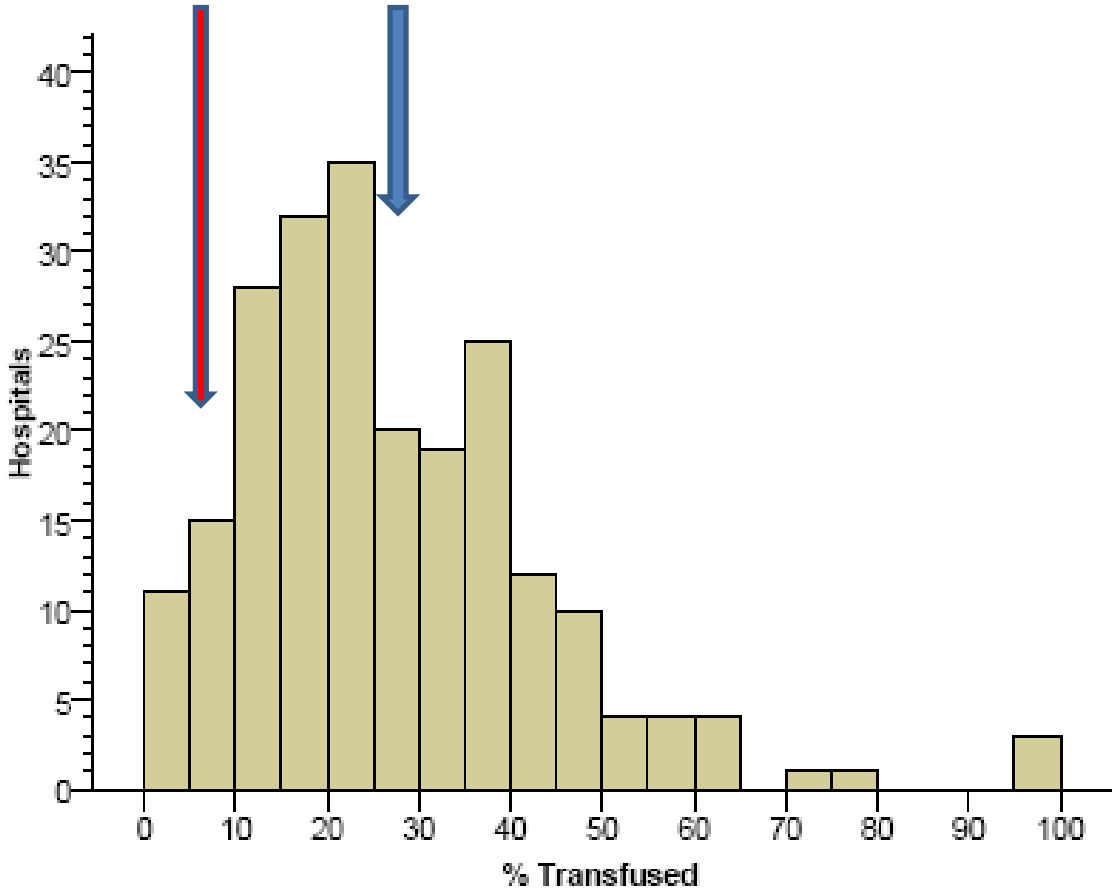
The ANHSFT Project: Transfusion data



24% to 7% Hips, p=0.001

7% to 2% Knees, p=0.3

Hospital variation histogram for the percentage of audit patients transfused



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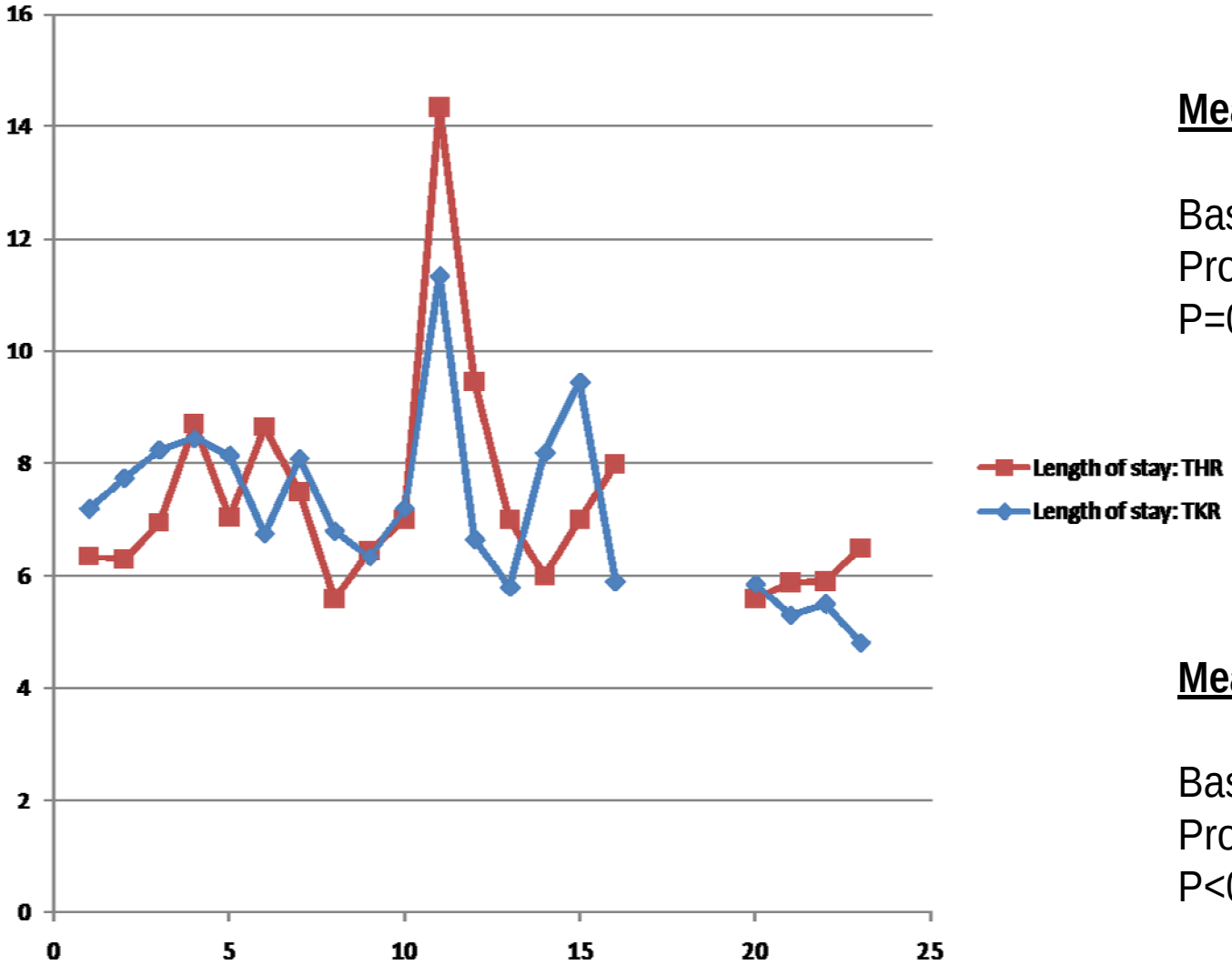
The ANHSFT Project: Length of stay



Mean LOS (Hips):

Baseline 7.44 days
Project 5.93 days
P=0.007

Mean LOS (Knees):

Baseline 7.48 days
Project 5.22 days
P<0.001

The ANHSFT Project: Readmission data

Readmission data

	Before (%)	After(%)	p
Within 30 days	6.8	4.3	0.13
Within 90 days	13.8	8.2	0.02

The ANHSFT Project: Spend

- Project itself funded externally
  - The Health Foundation
  - "Shine initiative"
- Drug costs – ANHSFT (EPO & IV iron)
- General practice – oral iron
- 73 anaemic patients
  - 64 Treated with iron (13 IV) - £1950
  - 22 EPO treatments £18084

The ANHSFT Project: Savings

- Calculated savings 101 units of red cells
  - £13332 at standard NHSBT pricing
- Not including repeat testing, disposables, time, etc.
- Activity-based costs up to 4 times product cost (£13332x4=£53328)
- LOS and re-admission carry cost penalties

- **Shander A et al.** *Transfusion;*50: 753-765

The ANHSFT Project: Conclusions

- Strong associations found between transfusion, pre-operative Hb and outcome up to discharge
- Relationship between transfusion and outcome up to 90 days
- Transfusion rate decreased by two thirds
- Length of stay decreased by > 2 days
- Decrease in readmission rates
- Modest cash cost at worst, probable cost savings