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Royal Free London NHS
NHS Foundation Trust

2 UNIT RBC TRANSFUSIONS

PATIENT BLOOD MANAGEMENT

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Royal Free Hospital

Surgical patient blood management meeting
23rd January 2015

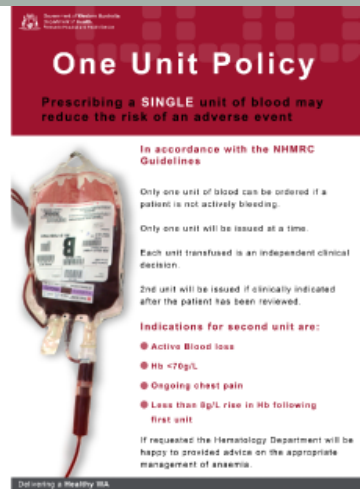
Background

- Patient blood management (PBM)
  - Rationalised use of a potentially hazardous, costly and scarce resource[1]

- Restrictive transfusion strategies
  - Systematic review of observational cohort studies:
    - Increased morbidity and mortality in transfused patients (risks outweighed benefits)[2]
  - RCTs:
    - Improved outcomes in restrictive transfusion threshold group (trigger Hb <7g/dL) (TRICC)[3]
    - Equivalent outcomes in high risk orthopaedic patients with restrictive vs liberal TXN strategies[4]

- Excessive transfusion is common[5]
  - 25% transfusions result in post TXN Hb >9g/dL
  - Post transfusion/discharge Hb is a surrogate marker of TXN appropriateness

Unit by unit transfusion Policies



- Desirable because….
  - Each and every unit of blood is a rationalised independent clinical decision (expected benefit outweighs risk)
  - May reduce unnecessary transfusion in conjunction with restrictive transfusion strategies
  - Patient centred and tailored

- Possible because….
  - Examples of successful implementation internationally
    - Western Australia[7,8], Maine[9]

Stay Single
... prescribe single units

Prescribing a single unit of blood may reduce the risk of an adverse event

In accord with the NHMRC guidelines a "ONE UNIT" policy will be implemented from August 1st 2009

- Only one unit of blood can be ordered if a patient is not actively bleeding.
- Only one unit will be issued at a time.
- 2nd unit will be issued if clinically indicated after the patient has been reviewed.
- Each unit transfused is an independent clinical decision.
- If requested the Haematology Department will be happy to provide advice on the appropriate management of anaemia

One Unit Policy

Prescribing a SINGLE unit of blood may reduce the risk of an adverse event

In accordance with the NHMRC Guidelines

Only one unit of blood can be ordered if a patient is not actively bleeding.

Only one unit will be issued at a time.

Each unit transfused is an independent clinical decision.

2nd unit will be issued if clinically indicated after the patient has been reviewed.

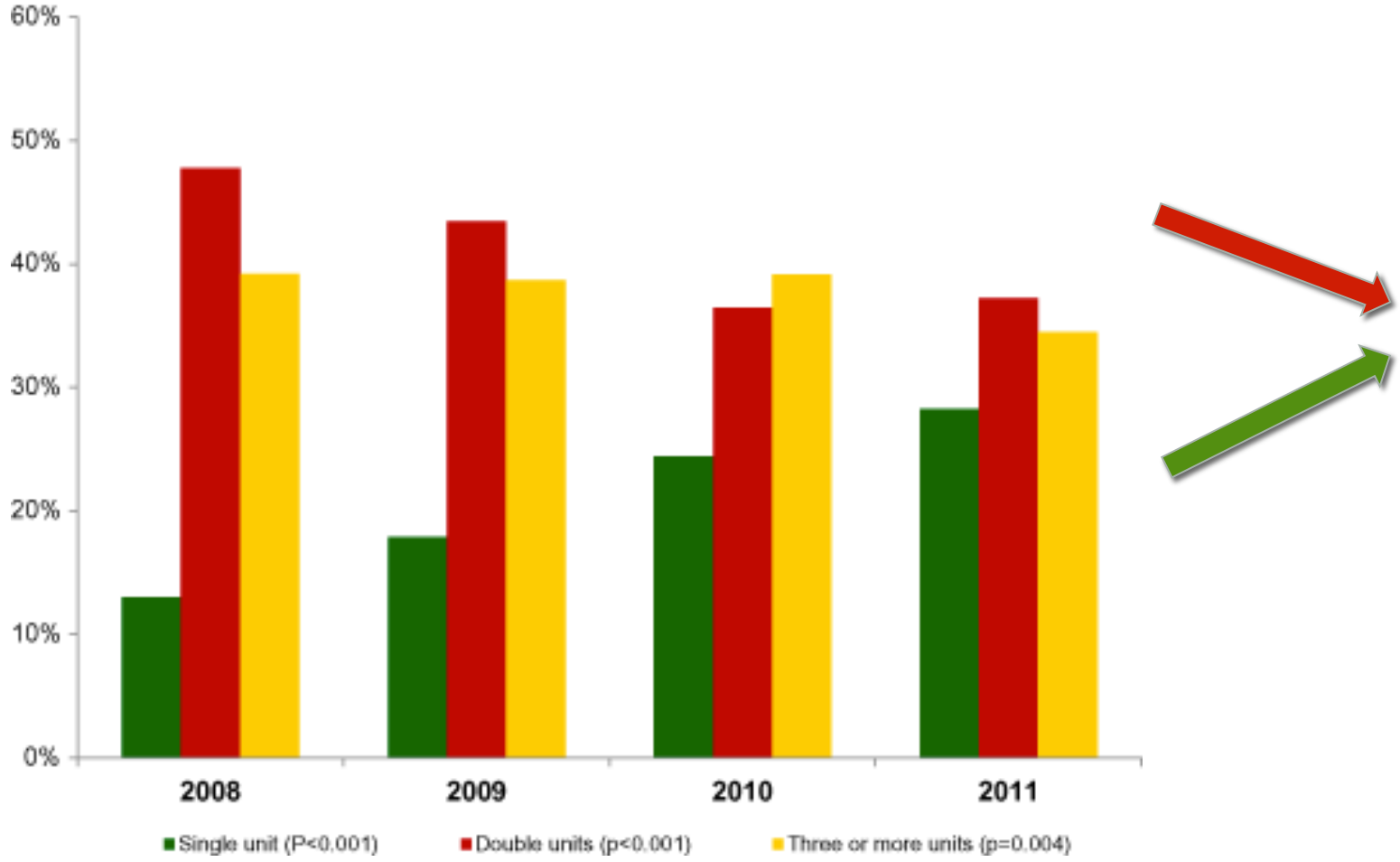
Indications for second unit are:

- Active Blood loss
- Hb <70g/L
- Ongoing chest pain
- Less than 8g/L rise in Hb following first unit

If requested the Haematology Department will be happy to provided advice on the appropriate management of anaemia.

Delivering a Healthy WA

Single unit transfusion



Michael F Leahy

TRANSFUSION Volume 54, April 2014

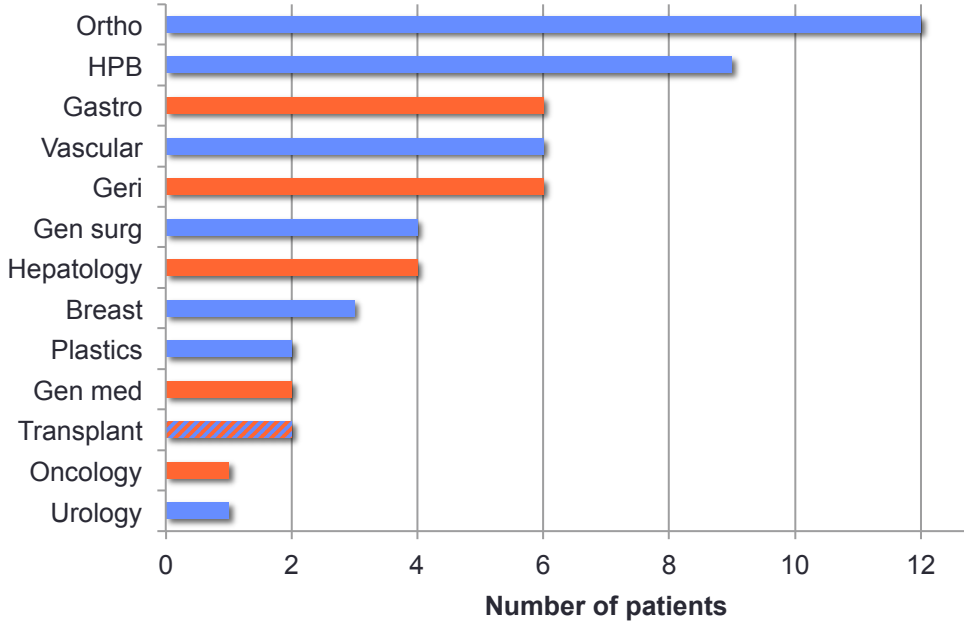
A pragmatic approach to embedding patient blood management in a tertiary hospital

What is our 2 unit transfusion practice?

- Inclusion
  - Adult inpatients
  - 2 units of RBC during a 12 hour period (medical + surgical)
- Exclusion
  - Haematology
  - Renal
  - ICU
- Data Collection
  - 15/6/14 – 14/7/14
  - Patients identified at blood bank
  - Ward follow up: notes & electronic record review

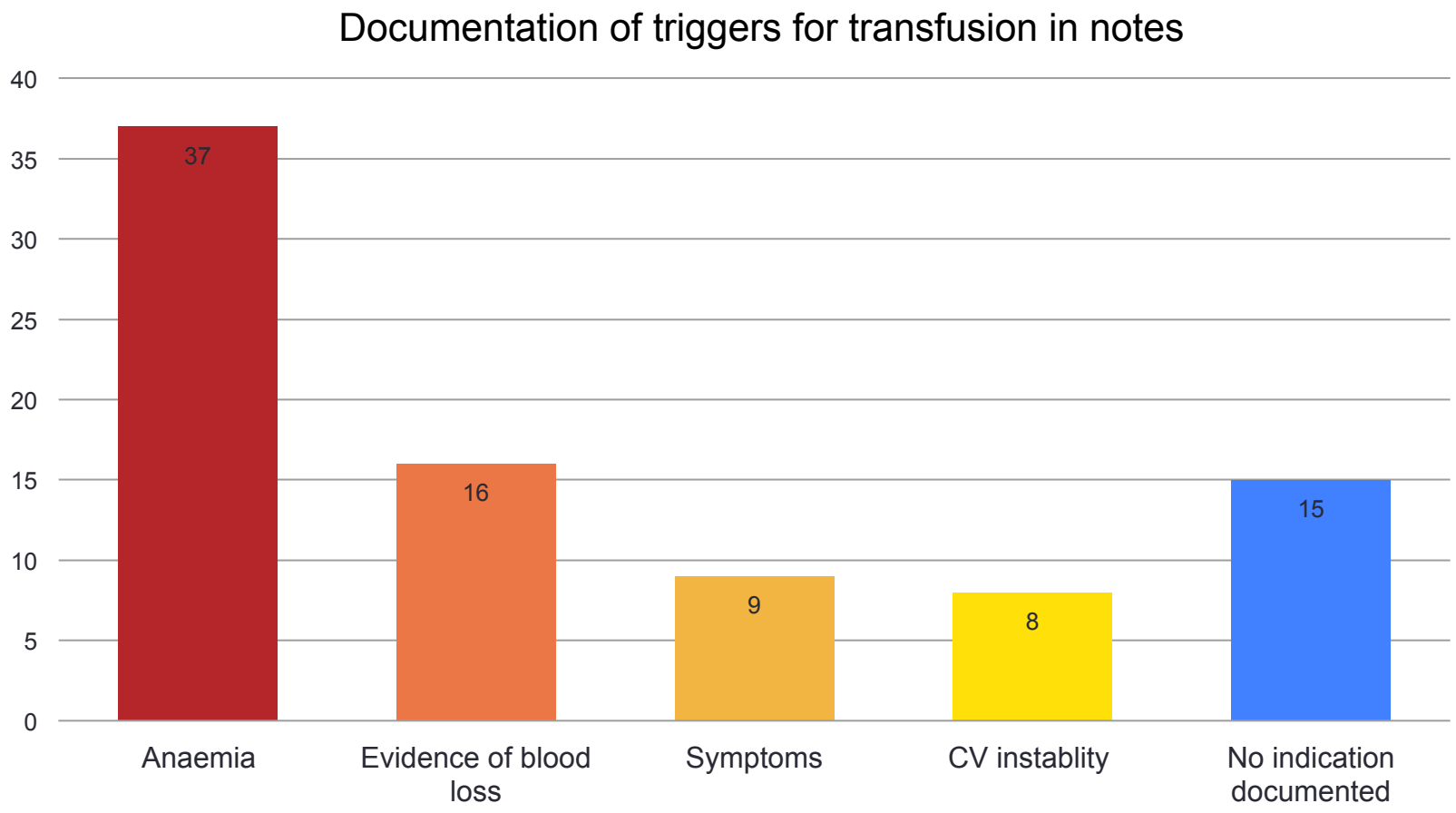
Results

- 58 2 unit RBC transfusions identified over 1 month period
- Demographics
  - Median age 69.8 years
  - [IQ range 47.5 - 84.5]
  - F 60%, M 40%
  - Surgical 65.5%, Medical 34.5%
  - Hx IHD 10%
  - Mean pre TXN Hb 77 g/L (SD 10.2)
  - Mean post 2 unit Hb 98 g/L (SD 11.1)

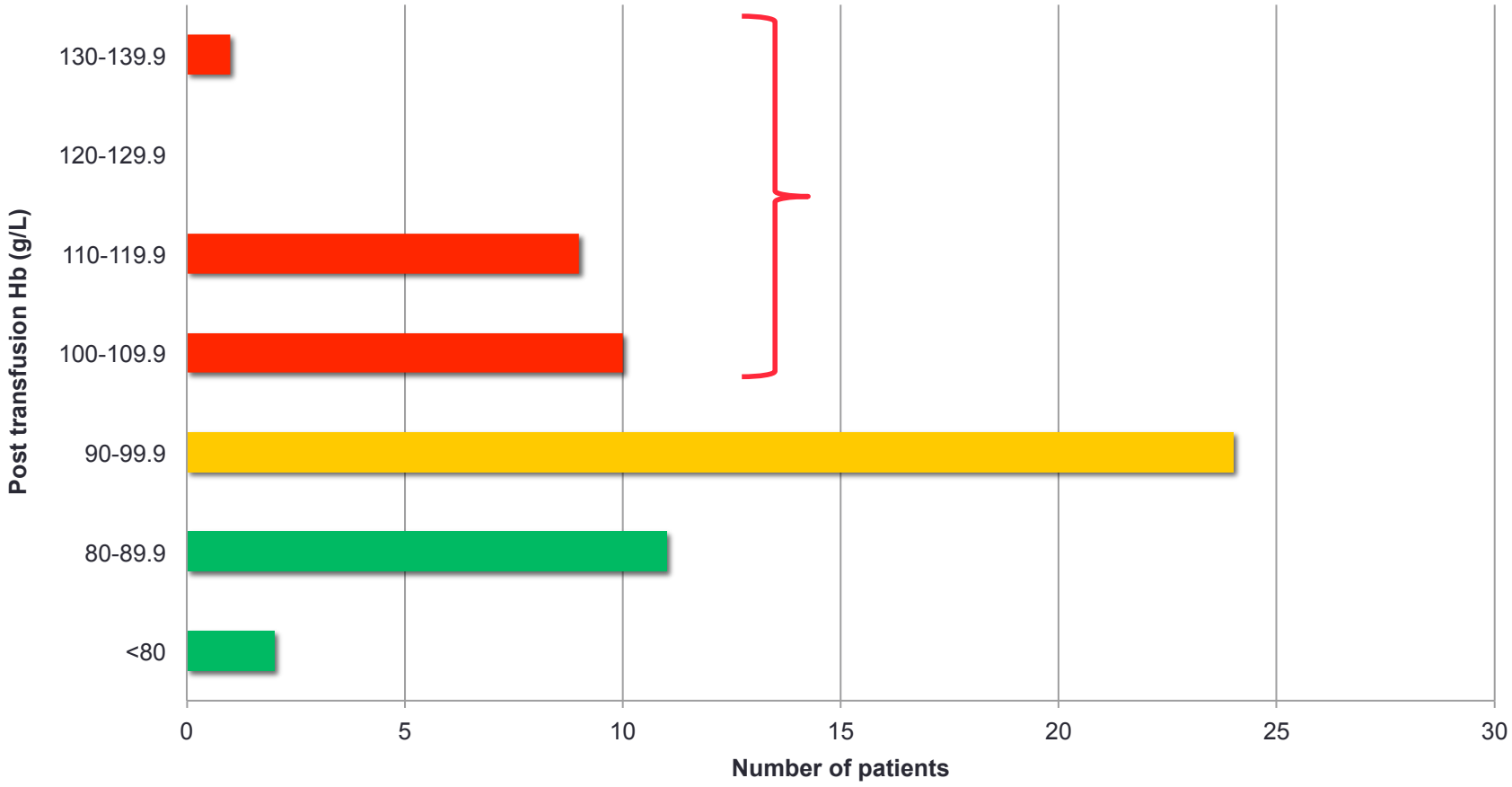


Results

- 95% patients were transfused 2 units on the ward

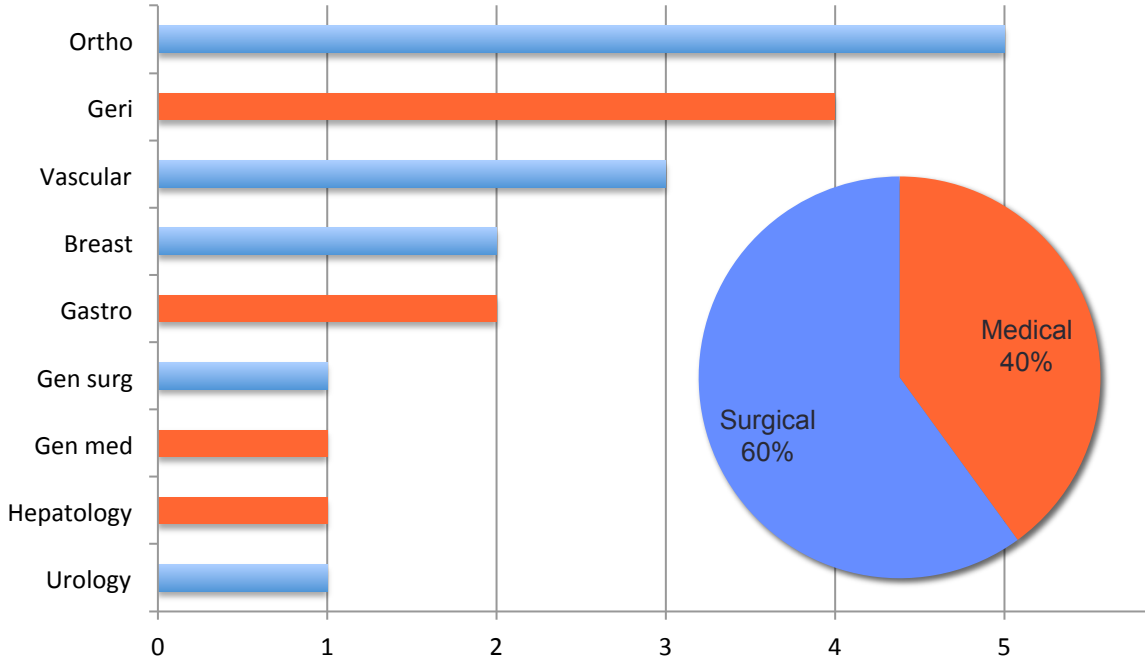


Results – Post 2u transfusion Hb



Patients with post TXN Hb ≥100g/L

- 20/58 (34.5%)
- Demographics
  - Median age 69.6 years [IQ range 48 – 85]
  - M 53% F 47%
  - Hx IHD 2/20 (10%)

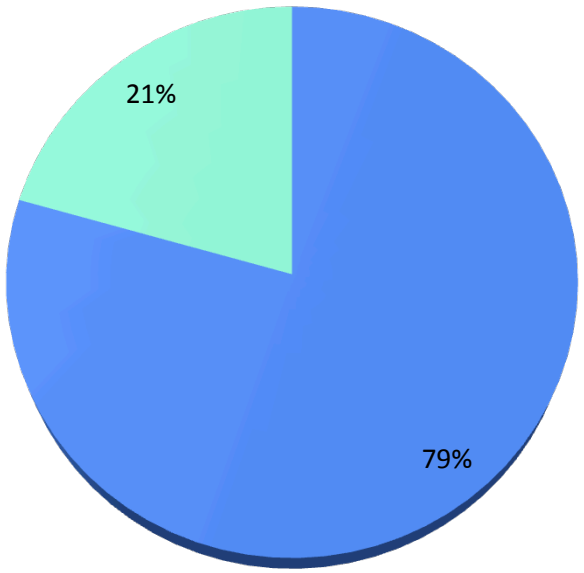


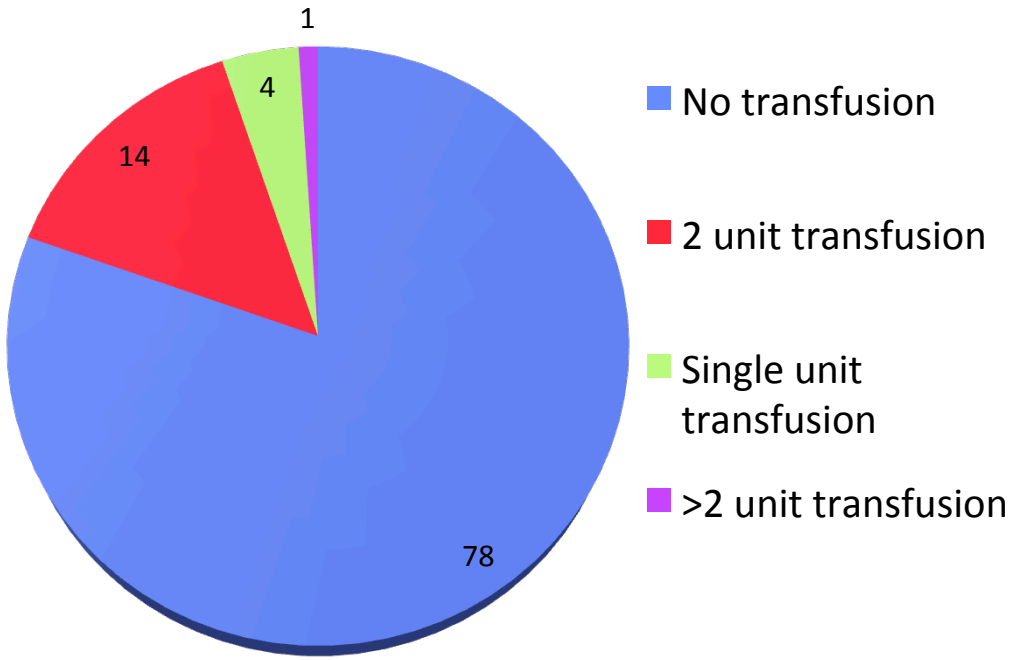
- Evidence of blood loss 4/20 (20%), 1 with active clinically significant bleeding
- Mean pre TXN Hb 82.8 g/L (SD 12.2)
- Mean post 2 unit Hb 108.8 g/L (SD 8.68)

Orthopaedic transfusion practice

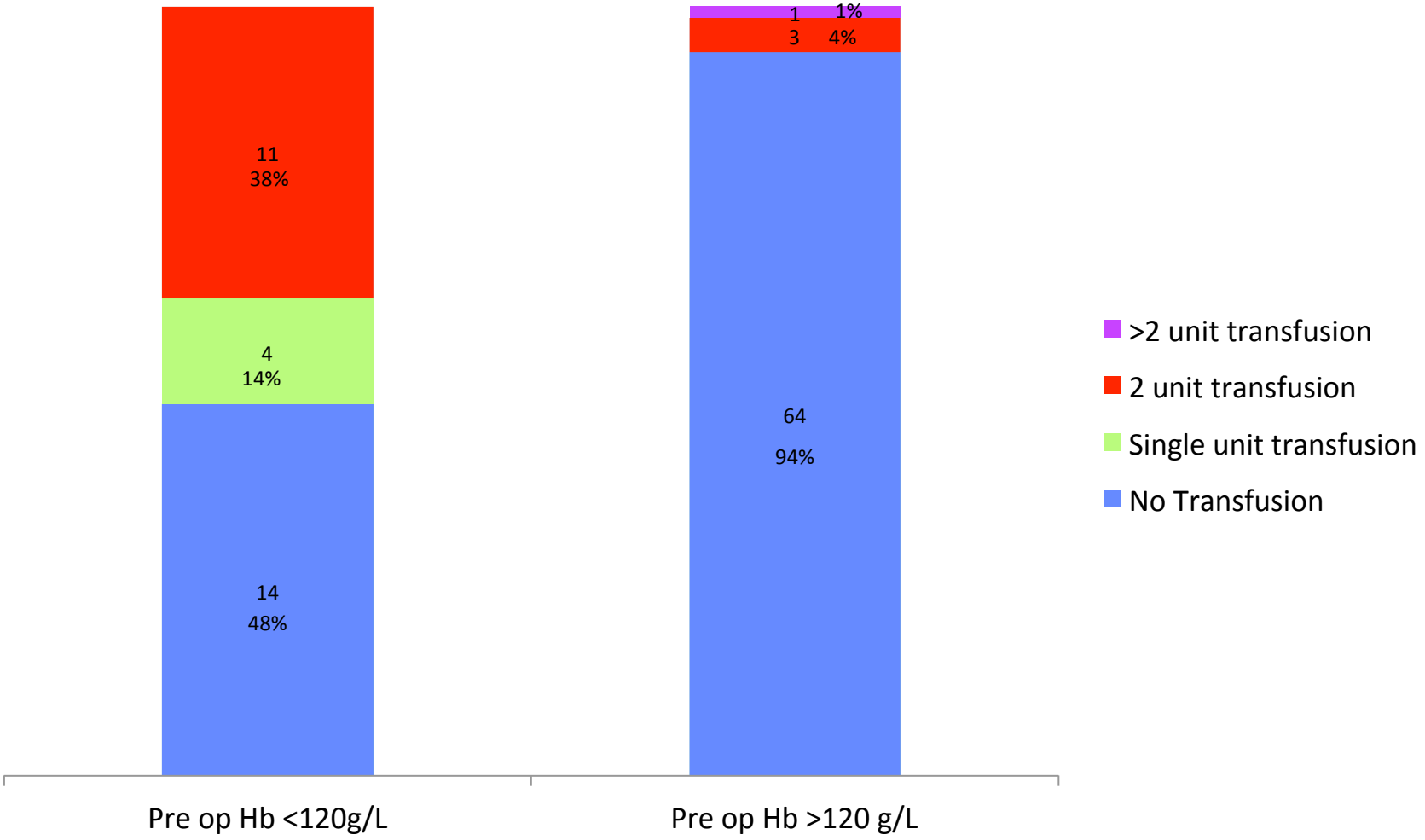
- All major elective/emergency orthopaedic cases
- 2 month period (09/2014 - 10/2014)
- Electronic patient record trawl:
  - Demographics
  - Pre op Hb
  - Post op Hb
  - Lowest recorded Hb
  - Number of units RBC transfused
  - Post transfusion Hb
  - Discharge Hb

n = 97

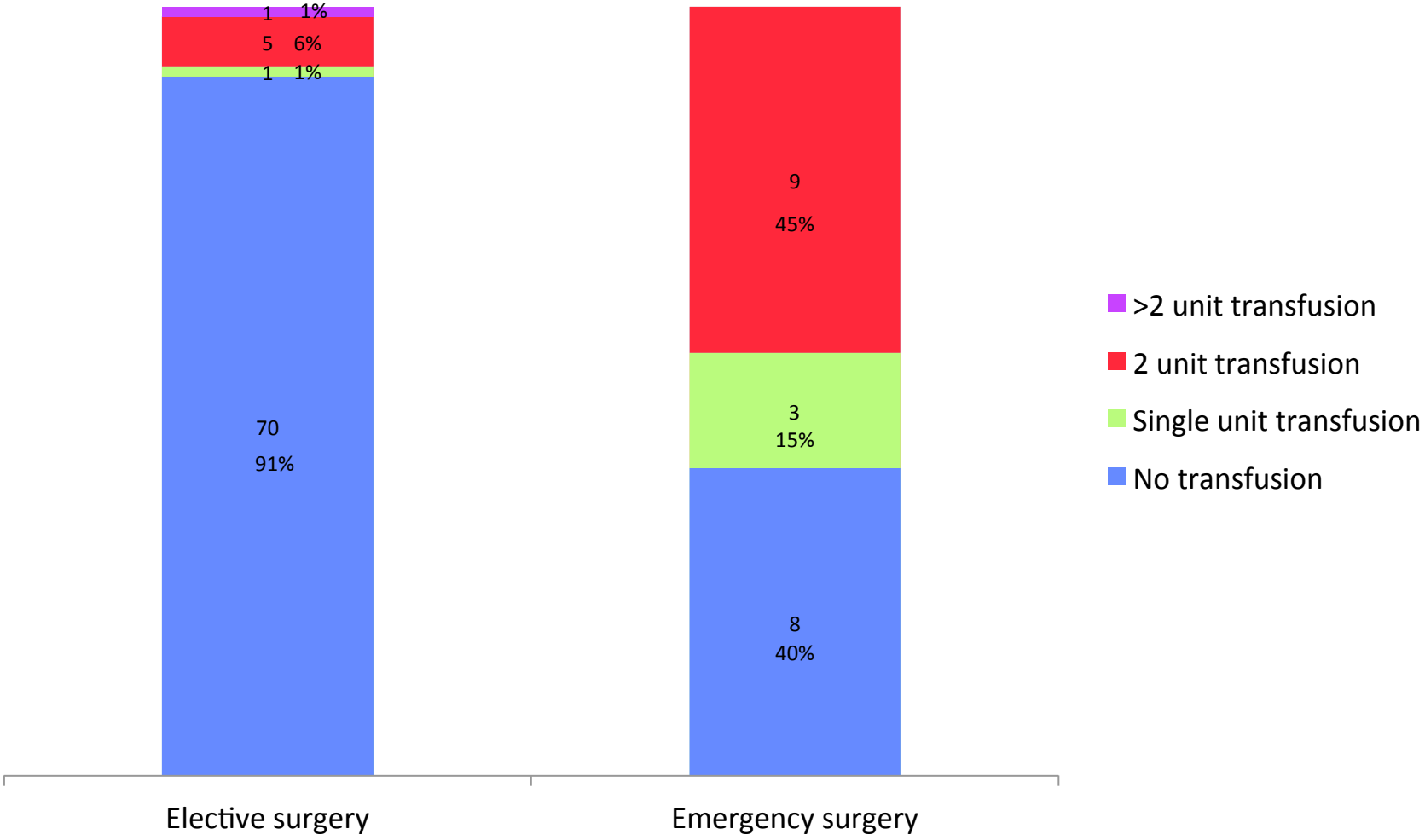

21%
79%
Elective surgery
Emergency surgery


1
4
14
78
No transfusion
2 unit transfusion
Single unit transfusion
>2 unit transfusion

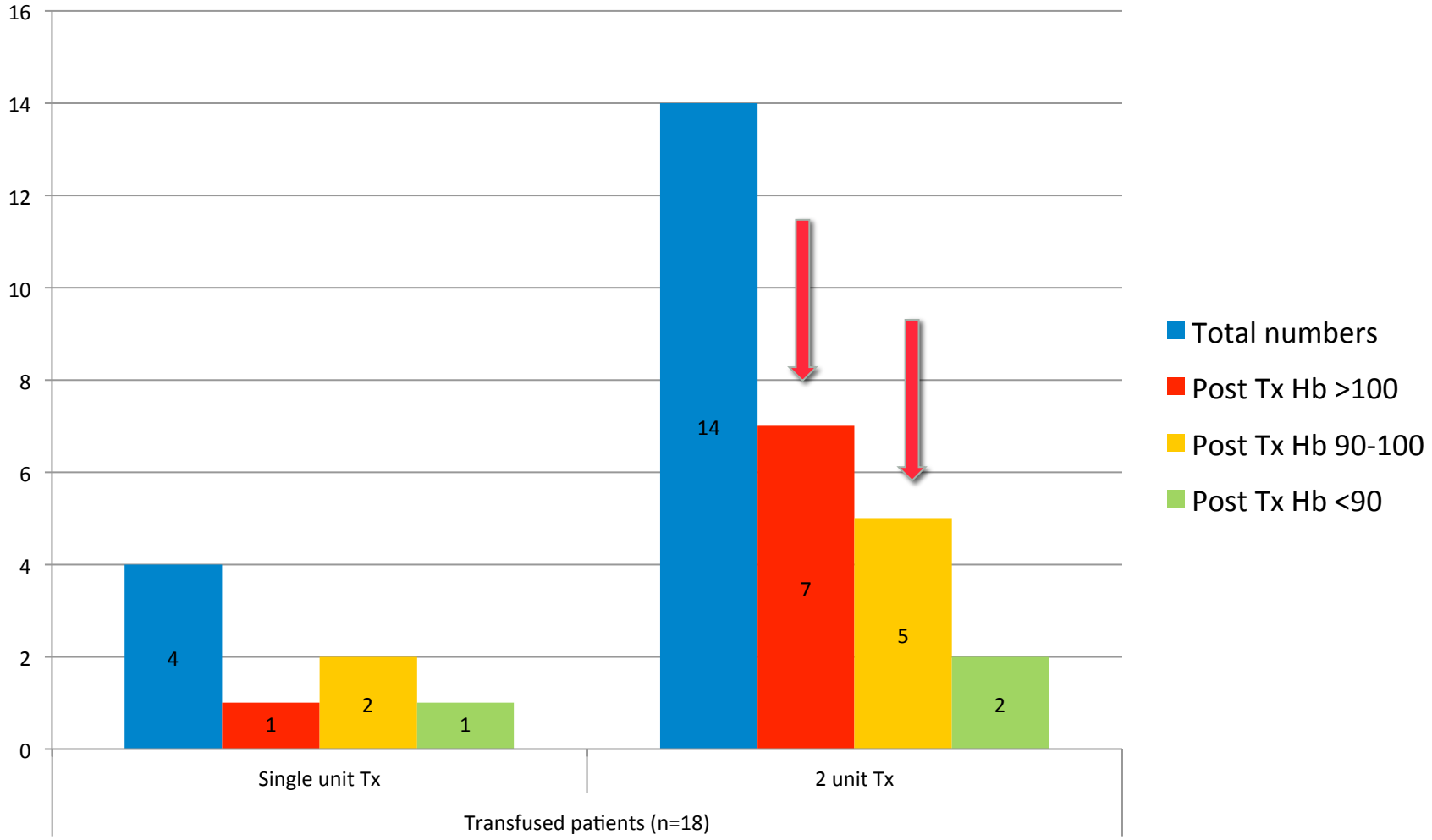
Impact of pre operative Hb on transfusion rates



Impact of urgency of surgery on transfusion rates



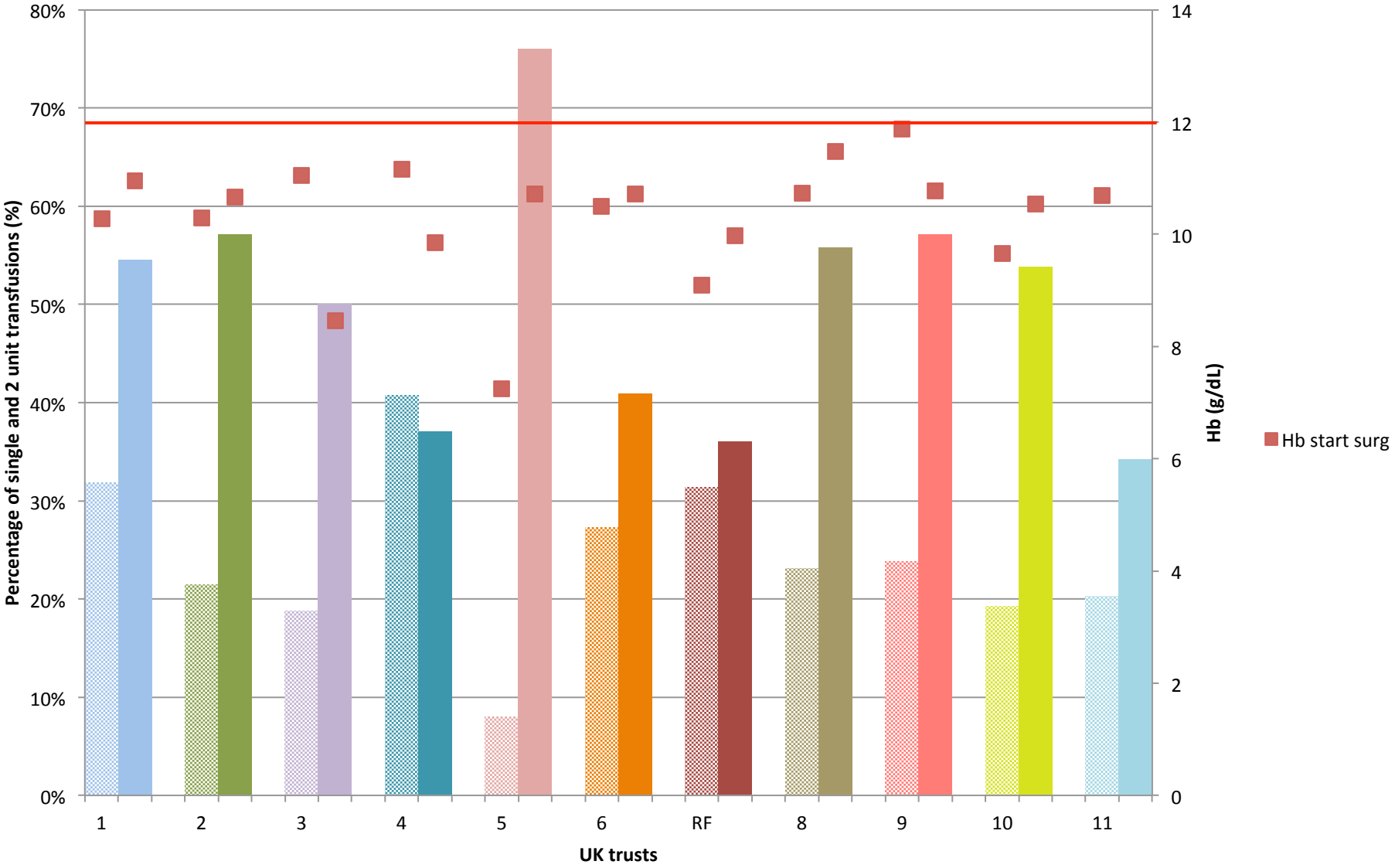
Post transfusion Hb



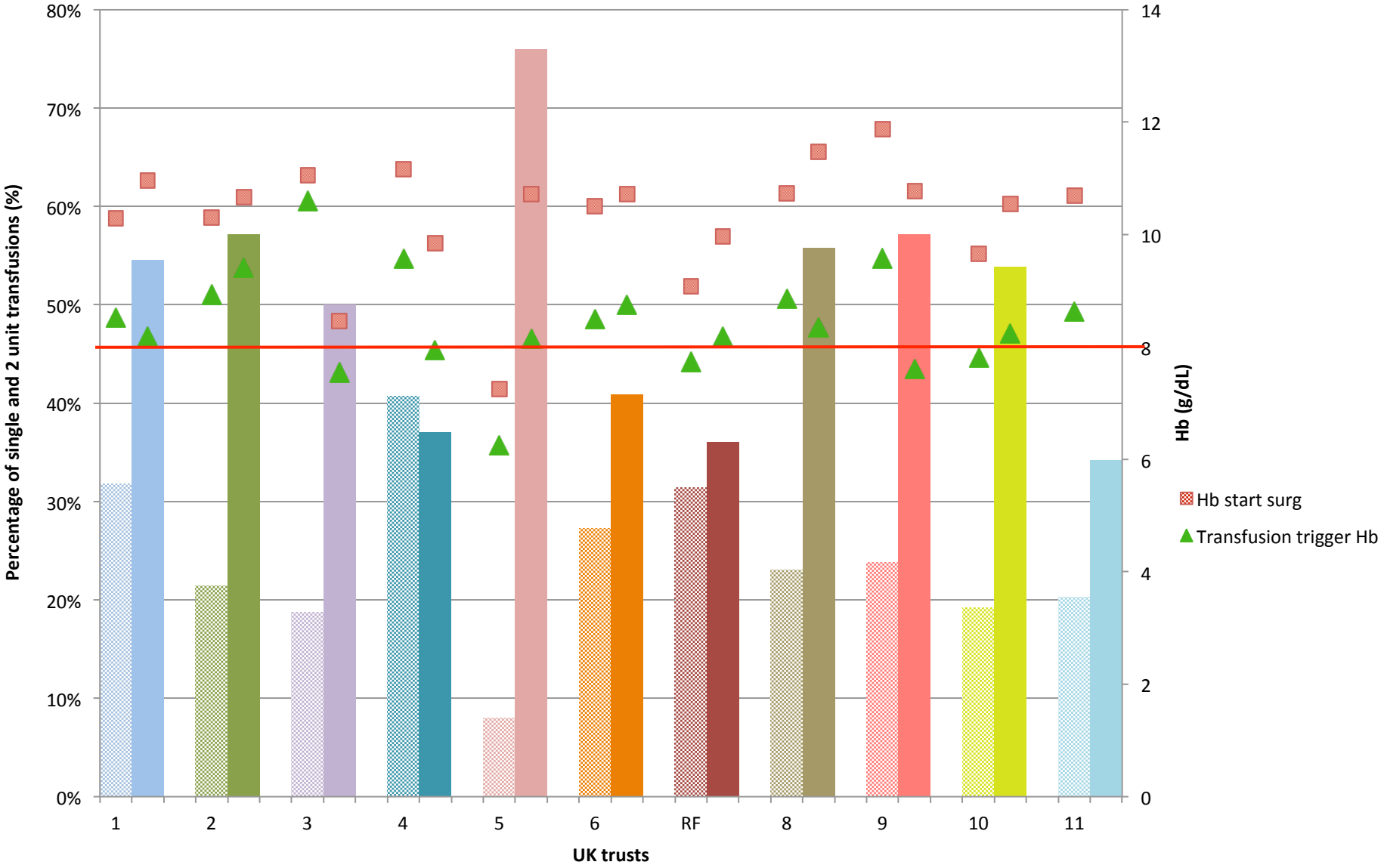
- European Transfusion Practice and Outcome Study
  - An observational multi-centre evaluation of transfusion care and clinical outcome for elective surgical patients

  - Objectives
    - Describe differences in transfusion practice (and relate to perioperative outcomes)
  - Inclusion
    - Adult, elective, non cardiac
    - Transfused at least one unit RBC in the operating theatre
  - Sample size and centres
    - 3 month period
    - 11 trusts UK
    - 30 European countries
    - 5855 transfusions reported

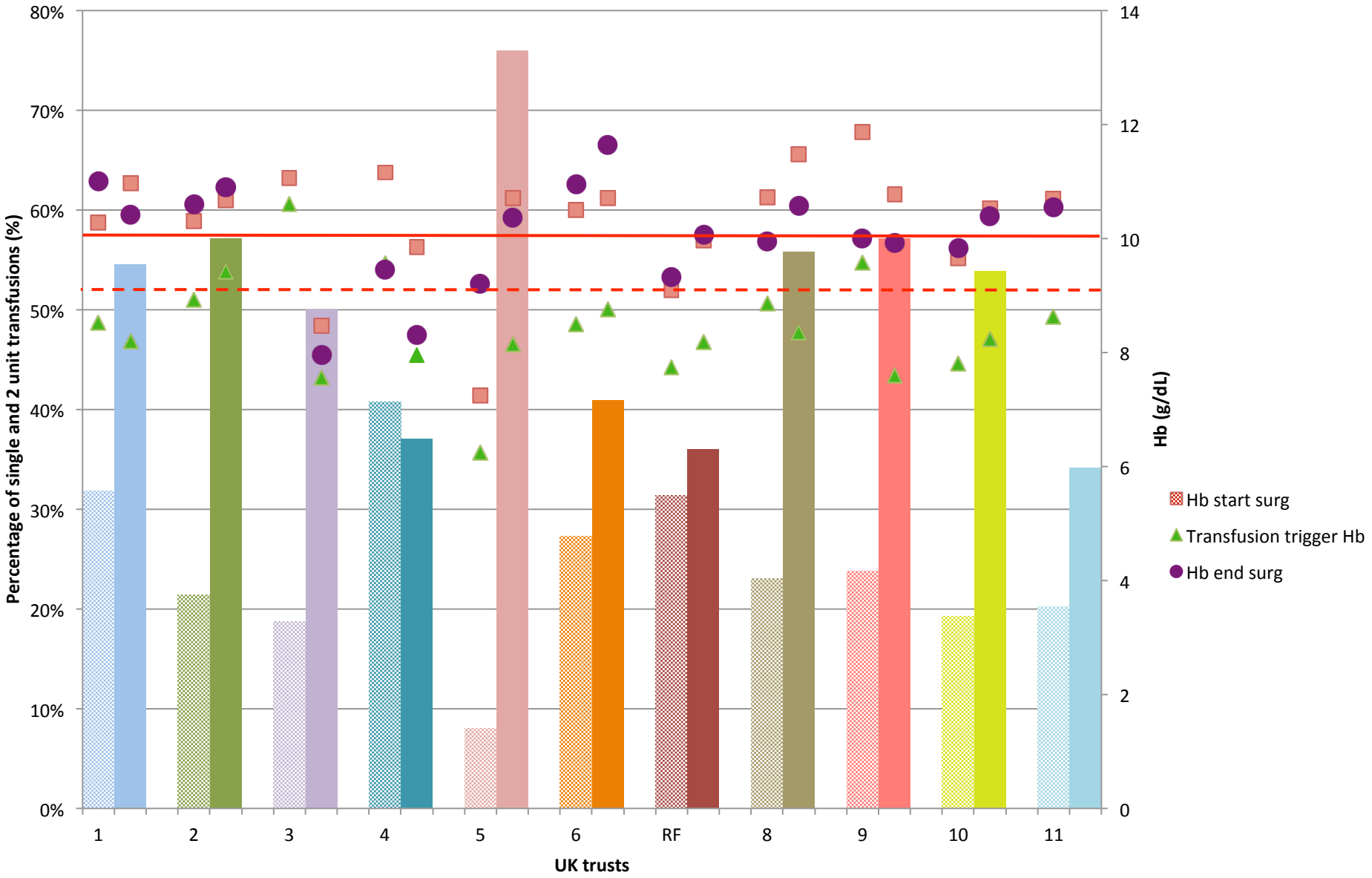
UK Pre operative Hb



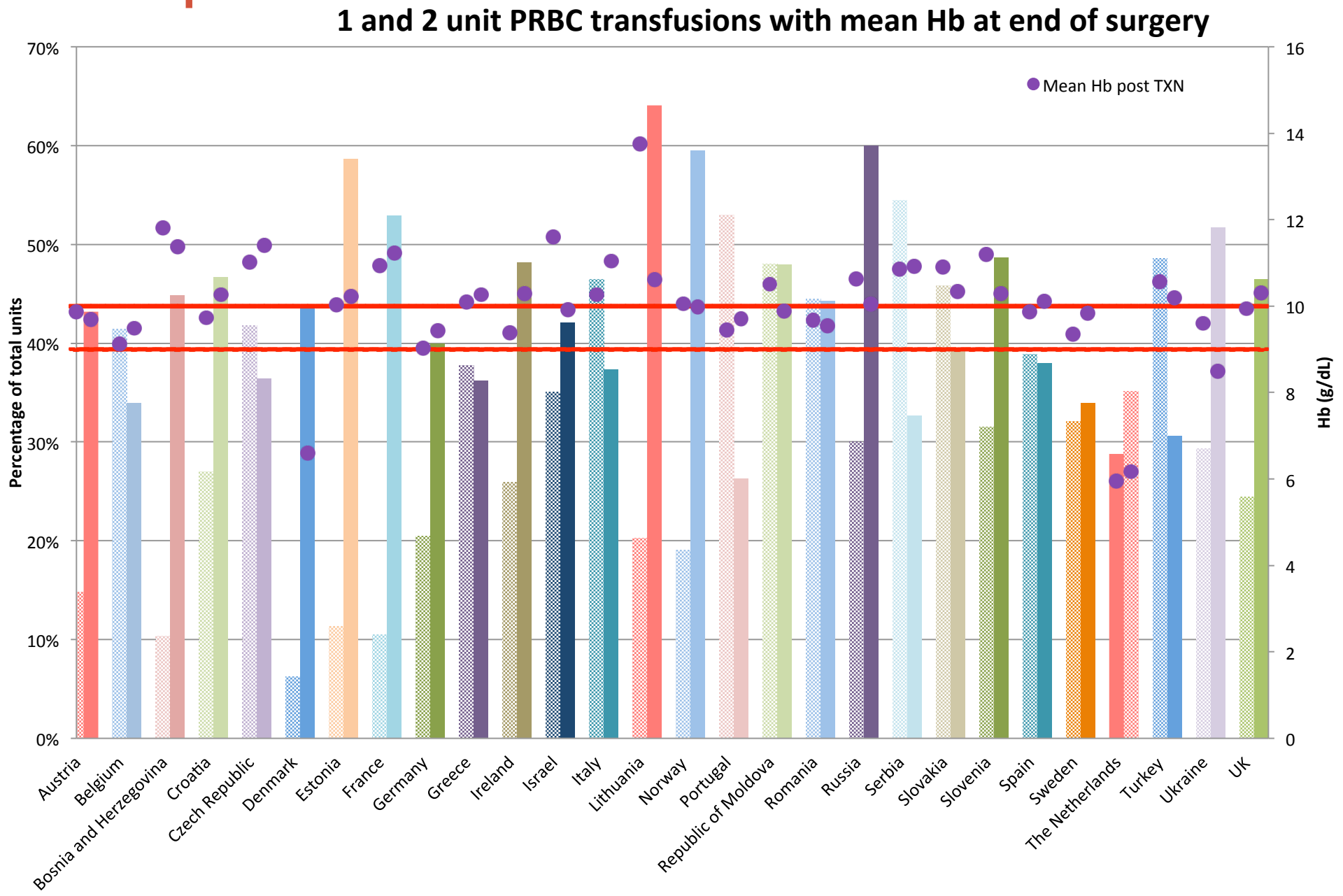
UK Transfusion triggers



UK Perioperative transfusion practice



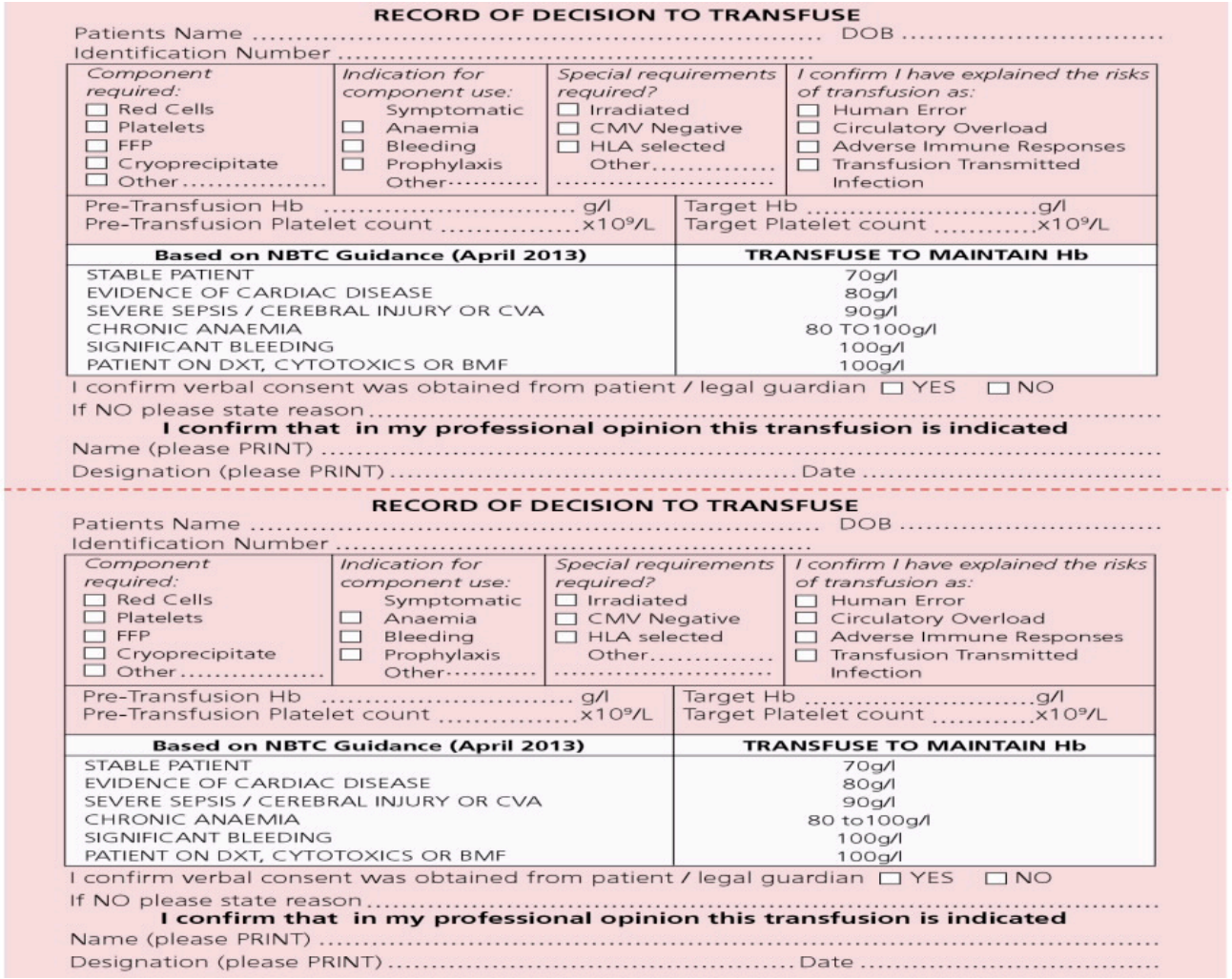
Europe


1 and 2 unit PRBC transfusions with mean Hb at end of surgery
Mean Hb post TXN
Percentage of total units
Hb (g/dL)
70%
60%
50%
40%
30%
20%
10%
0%
16
14
12
10
8
6
4
2
0
Austria
Belgium
Bosnia and Herzegovina
Croatia
Czech Republic
Denmark
Estonia
France
Germany
Greece
Ireland
Israel
Italy
Lithuania
Norway
Portugal
Republic of Moldova
Romania
Russia
Serbia
Slovakia
Slovenia
Spain
Sweden
The Netherlands
Turkey
Ukraine
UK

Conclusions

- 2 unit transfusions are still commonly prescribed: RFH/UK/ Europe
- Many result in final Hb >100g/L
- Implementing a unit by unit policy (+ restrictive triggers/ targets)
  - **EVERY UNIT TRANSFUSED IS AN INDEPENDENT CLINICAL DECISION WHERE BENEFIT OUTWEIGHS RISK**
  - Reduction in unnecessary 2nd unit RBC
  - Reduce RBC usage
  - Reduce dose dependent risks of RBC transfusion

Future plans - pilot



RECORD OF DECISION TO TRANSFUSE

Patients Name ..... DOB .....

Identification Number .....

Component required:	*Indication for component use:*	*Special requirements required?*	*I confirm I have explained the risks of transfusion as:*
☐ Red Cells	Symptomatic	☐ Irradiated	☐ Human Error
☐ Platelets	☐ Anaemia	☐ CMV Negative	☐ Circulatory Overload
☐ FFP	☐ Bleeding	☐ HLA selected	☐ Adverse Immune Responses
☐ Cryoprecipitate	☐ Prophylaxis	Other.....	☐ Transfusion Transmitted Infection
☐ Other.....	Other.....	.....	

Pre-Transfusion Hb ..... g/l	Target Hb .....g/l
Pre-Transfusion Platelet count x10⁹/L	Target Platelet count x10⁹/L

Based on NBTC Guidance (April 2013)	**TRANSFUSE TO MAINTAIN Hb**
STABLE PATIENT	70g/l
EVIDENCE OF CARDIAC DISEASE	80g/l
SEVERE SEPSIS / CEREBRAL INJURY OR CVA	90g/l
CHRONIC ANAEMIA	80 TO100g/l
SIGNIFICANT BLEEDING	100g/l
PATIENT ON DXT, CYTOTOXICS OR BMF	100g/l

I confirm verbal consent was obtained from patient / legal guardian ☐ YES ☐ NO

If NO please state reason .....

I confirm that in my professional opinion this transfusion is indicated

Name (please PRINT) .....

Designation (please PRINT) ..... Date .....

RECORD OF DECISION TO TRANSFUSE

Patients Name ..... DOB .....

Identification Number .....

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☐ Other.....	Other.....	.....	

Pre-Transfusion Hb ..... g/l	Target Hb .....g/l
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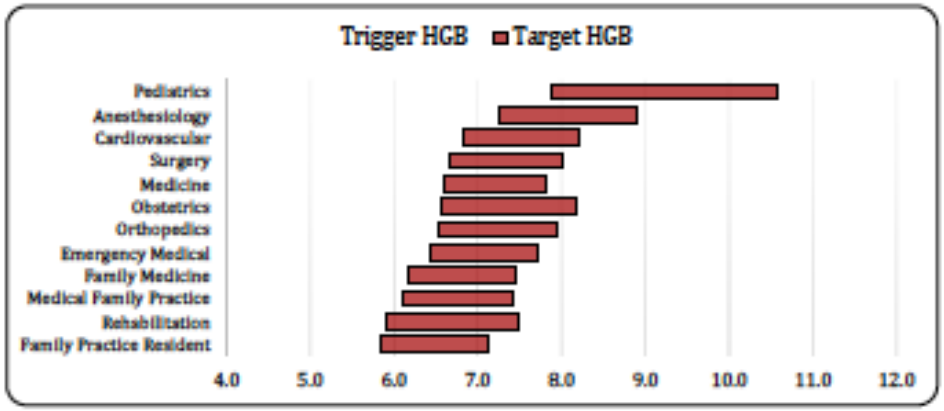
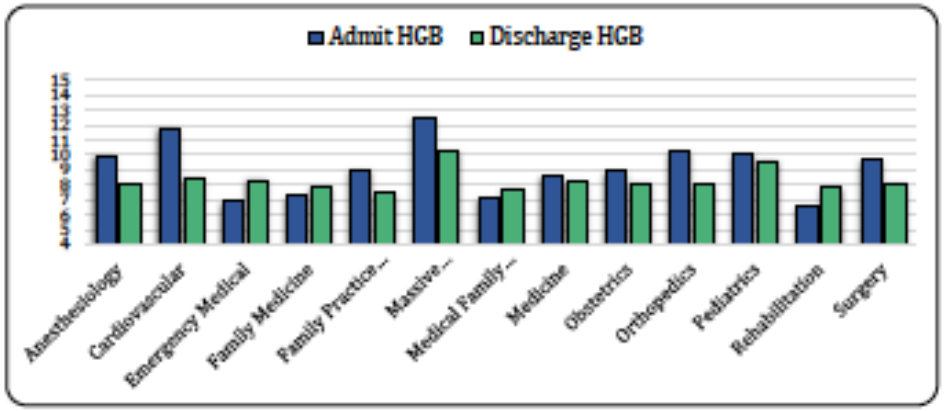
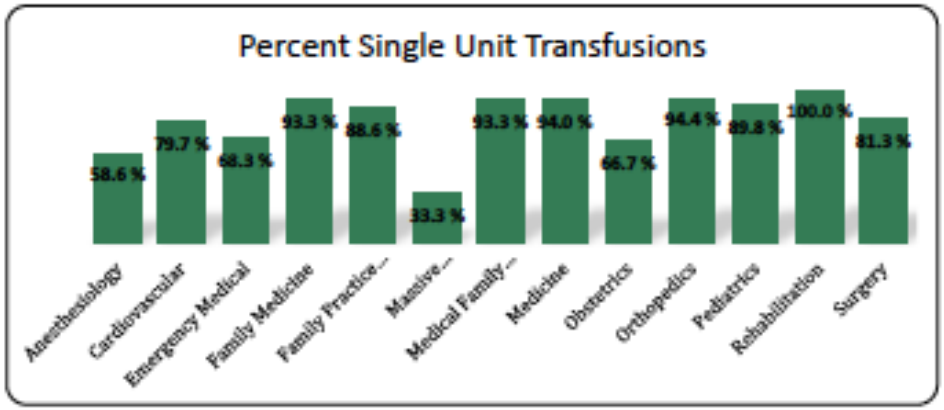
Measuring success

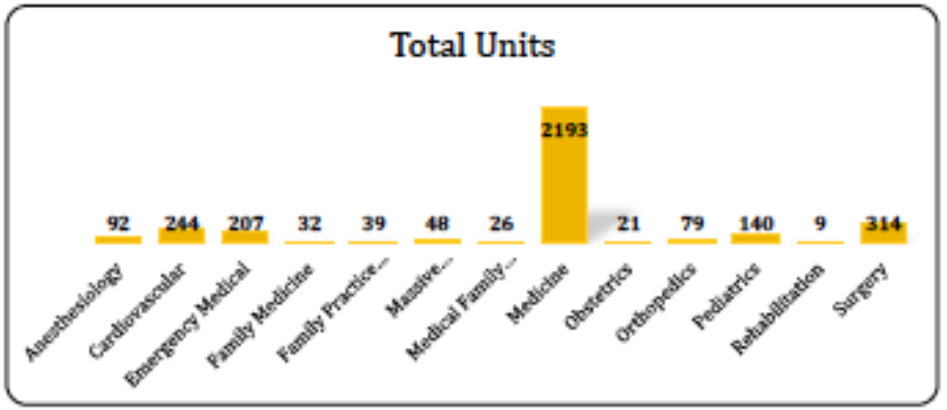
Red Cell Dashboard Summary

Start Date	End Date
9/29/2013 1:50:00 AM	9/27/2014 11:08:00 PM









Thank you

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9. Eastern Maine Medical Center Patient Blood Management Programme. 2007 http://www.emmc.org/blood_management