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**Optimal Blood Use Project**



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EU Optimal Use of Blood Use Project – Fourth Project Meeting 29<sup>th</sup> Sept – 1<sup>st</sup> Oct 2008



## Population NI

=  $1.685 \times 10^6$  (OPCS 2001)

=  $1.725 \times 10^6$  (OPCS 2006)

## Client Hospitals – Red Cell Issues

> 10,001	2
5,001 – 10,000	4
1,001 – 5,000	5
	—
	11

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## Source

- Business Information Committee .....
- UK Forum – Chief Executives and Medical Directors

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## UK Countries (England, Scotland, Wales, Northern Ireland) and Republic of Ireland

<b>RCCs Issues/ 1000 population</b>	<b>England</b>	<b>Scotland</b>	<b>Wales</b>	<b>Northern Ireland</b>	<b>Republic of Ireland</b>
03/04					
04/05	43.4	47.8	42.9	37.1	34.0
05/06	39.5	43.4	40.8	35.3	34.6
06/07	38.1	42.7	39.6	33.5	31.9
07/08				30.9	

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<b>Year</b>	<b>Red Cell Total Issues</b>	<b>% Movement from preceding year</b>
03/04	64,302	
04/05	62,554	
05/06	60,368	-3.4
06/07	56,816	-6.3
07/08	53,347	-5.6
Estimated 4 months 08/09	18,054	(+0.2)

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# Regulatory Framework

## UK Department of Health Circulars

- Better Blood Transfusion 1
- Better Blood Transfusion 2
- Better Blood Transfusion 3

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## Better Blood Transfusion 1 (BBT1) 1998

- Must have Hospital Transfusion Committee
- Must report adverse events to Serious Hazards of Transfusion (SHOT) enquiry



## Better Blood Transfusion 2 (BBT2) 2002

- Must have Hospital Transfusion teams
- Must participate in blood stocks management scheme
- Adverse event reporting is mandatory not voluntary
- Systematic audit have practice for compliance
- Training of all staff involved in blood transfusion process
- Better information for patients
- Promotion of alternatives to red cell transfusion

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# Information Resource

[www.transfusionguidelines.org](http://www.transfusionguidelines.org)

**Better Blood Transfusion 3 (BBT3) 2007**



# Local Example

- Red cell transfusion in elective primary total hip replacement surgery

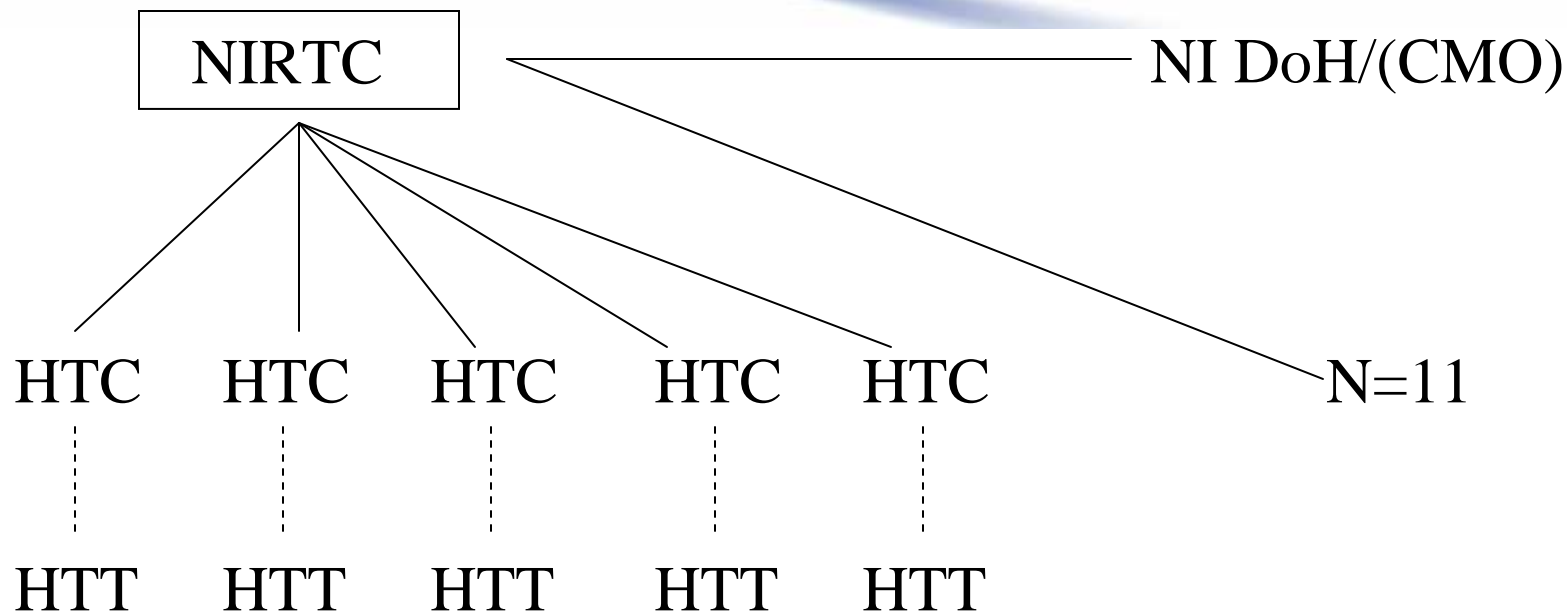
	Hospital A	Hospital B
1995	95%	30%
2007	20%	3%

Source: UK National Comparative Audit  
Red Cell Transfusions in Primary Total Hip  
Replacement Surgery

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NIRTTC = Northern Ireland Regional Transfusion Committee

HTC = Hospital Transfusion Committee

HTT = Hospital Transfusion Committee

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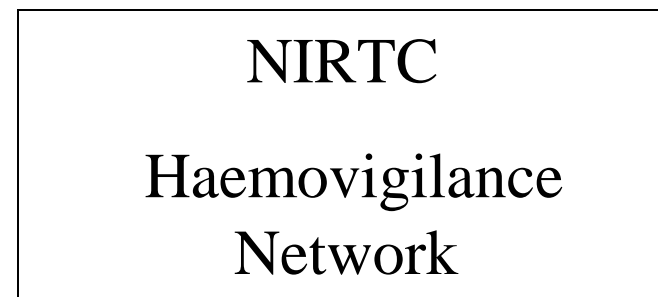


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Local Guidelines  
for Prescribing

Regional  
Audit &  
Feedback

Standardisation



Blood Stocks  
Management

Training &  
Assessment of Staff

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# Regional Appropriateness of Blood Transfusion Audit

Information Resource:

[www.rmagni.gov.uk/publications/ni\\_blood\\_transfusion\\_audit.pdf](http://www.rmagni.gov.uk/publications/ni_blood_transfusion_audit.pdf)



# Audit Criteria

## **Stable patients**

<65 years old with no  
cardiovascular or  
cerebrovascular problems

>65 years with no  
cardiovascular or  
cerebrovascular problems

## **Transfusion threshold**

Usually only consider  
transfusion when Hb <7g/dl

Usually only consider  
transfusion when Hb <8g/dl



## **Stable patients**

Known cardiovascular or cerebrovascular history (previous myocardial infarction, angina, hypertension, heart failure, peripheral vascular disease, pulmonary oedema)

## **Transfusion threshold**

Usually only consider transfusion when Hb <9g/dl



**Patients with symptoms  
due to anaemia**

**Unstable patients bleeding  
heavily**

**Impaired marrow function**

Symptoms (dyspnoea,  
angina, palpitations,  
tachycardia, orthostatic  
hypotension, syncope)

Likely to be due to the  
anaemia

*Note: Tiredness alone is not an appropriate symptom for transfusion*

**Transfusion threshold**

Consider transfusion when  
Hb <10g/dl



**Patients with symptoms due to  
anaemia**

**Unstable patients bleeding  
heavily**

**Impaired marrow function**

Documented/obvious evidence of ongoing significant bleeding at time of transfusion causing symptoms as above or bleeding more than 500ml per hour and not stopping

Current or recent (within 3 months) marrow failure or chemotherapy or radiotherapy

**Transfusion threshold**

Consider transfusion when  
Hb <10g/dl

Consider transfusion when  
Hb <10g/dl



# Overtransfusion

Patients should only be transfused to a target of 2.0g/dl Hb in excess of the chosen threshold for transfusion above.

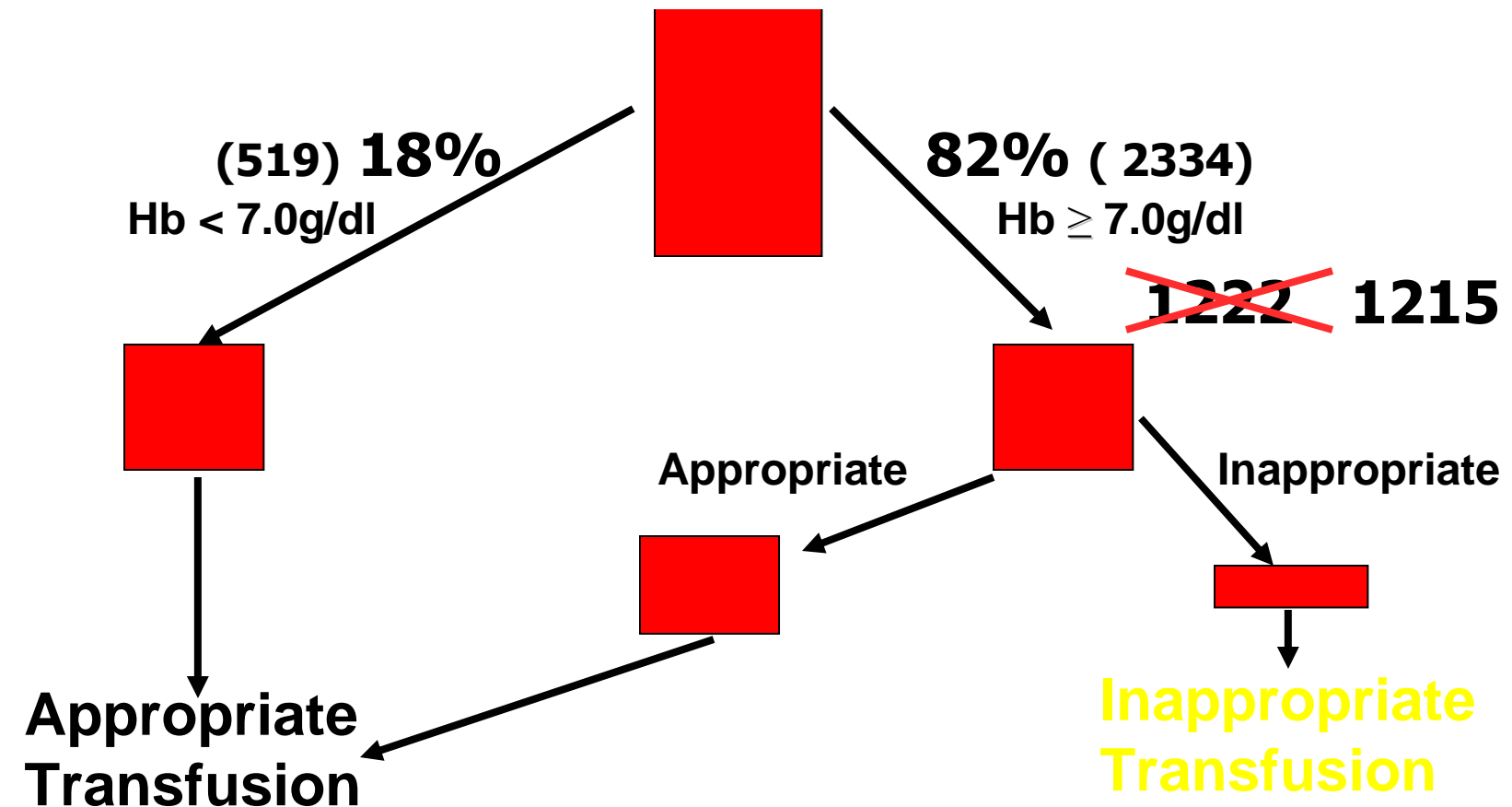
Consider patient's estimated blood volume and any ongoing bleeding



# Results

**2853**

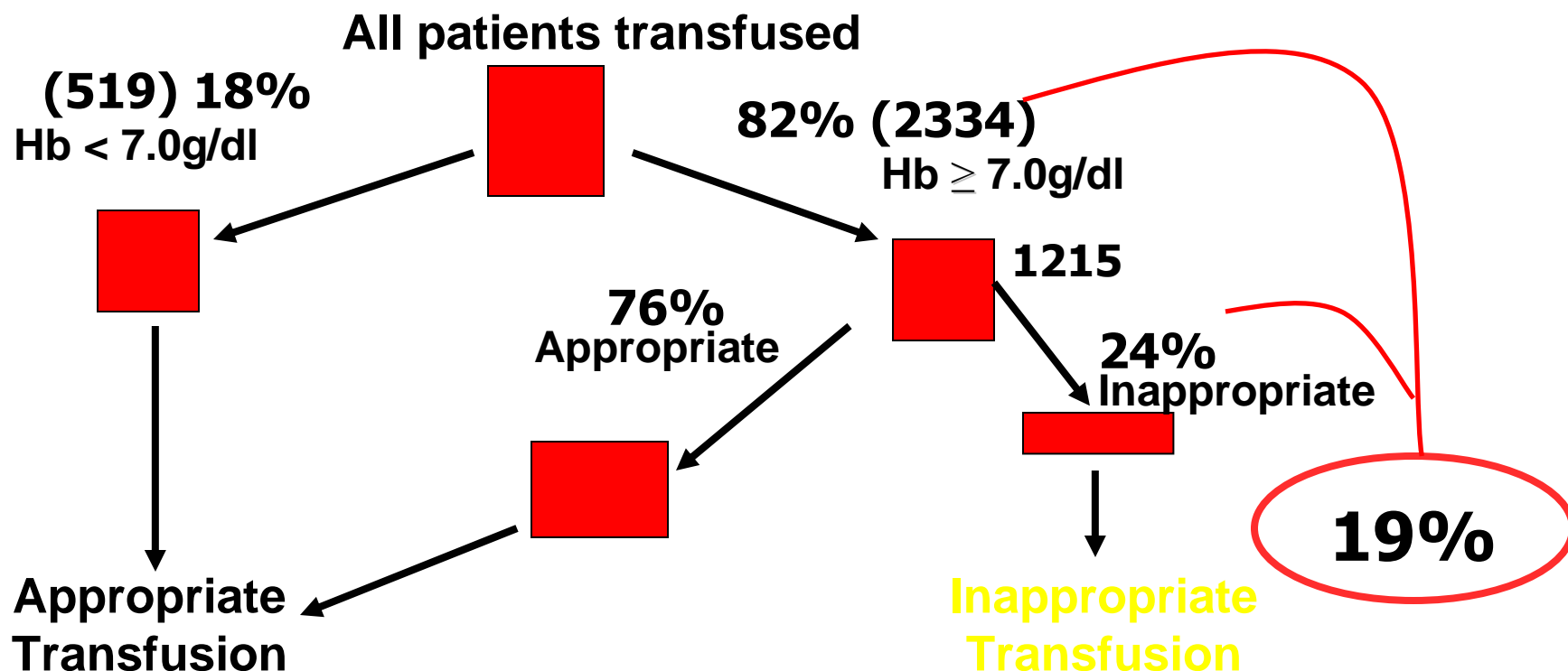
All patients transfused





# Overall Inappropriate Transfusion

**2853**



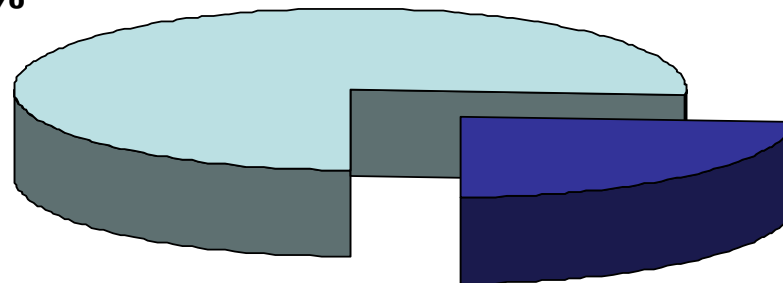
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# Inappropriate Transfusion

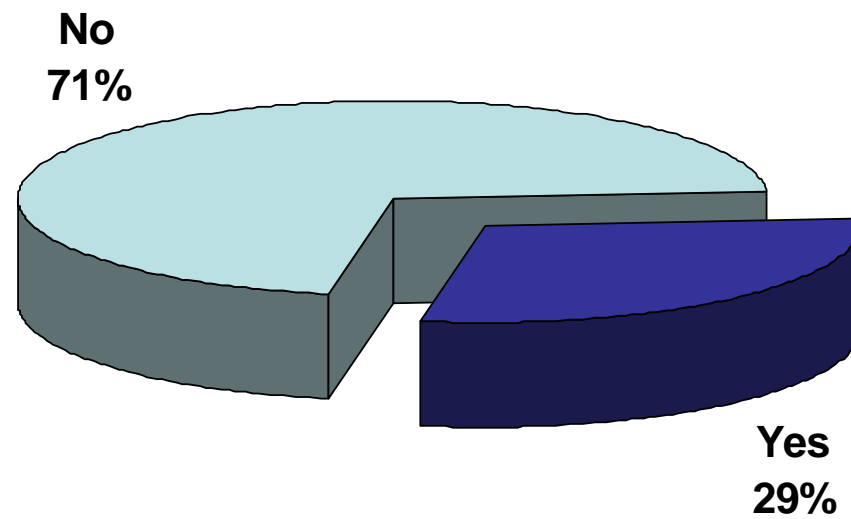
**Appropriate  
76%**



**Inappropriate  
24%**



# Overtransfusion



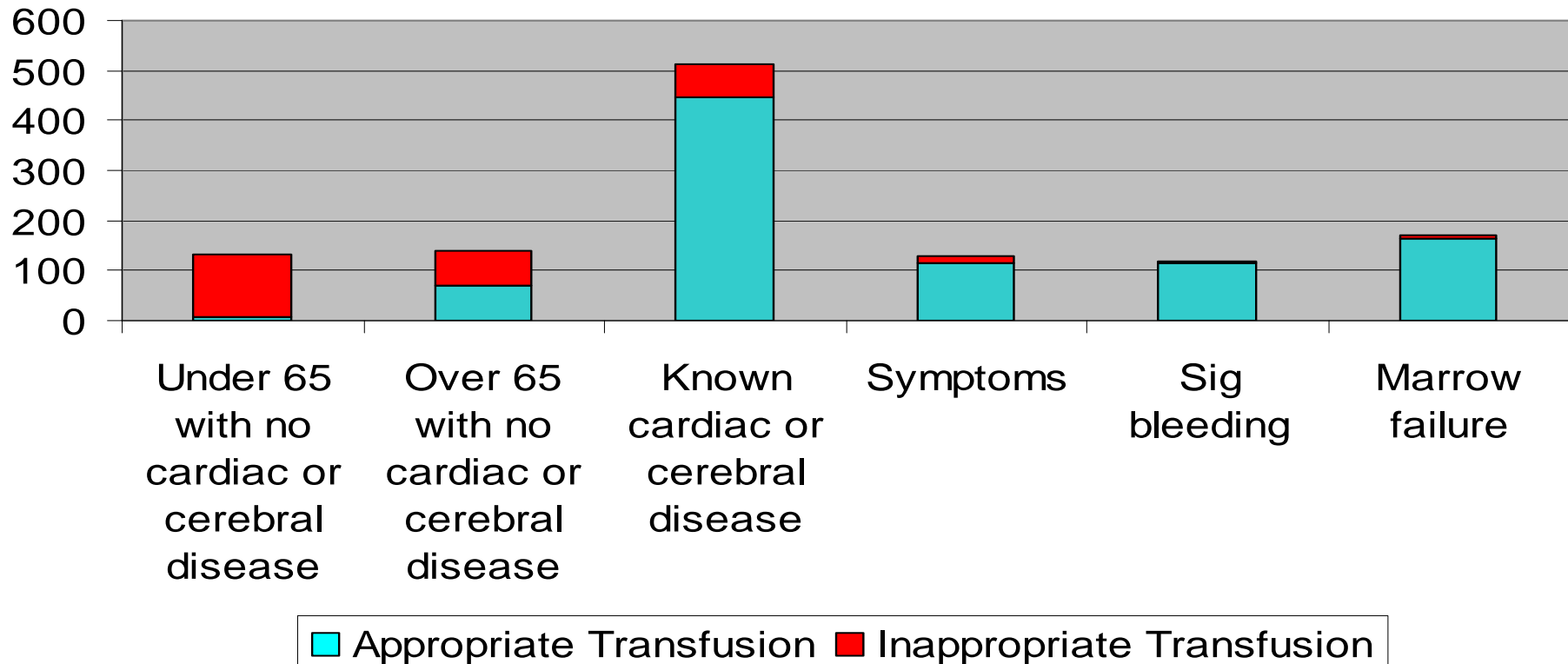


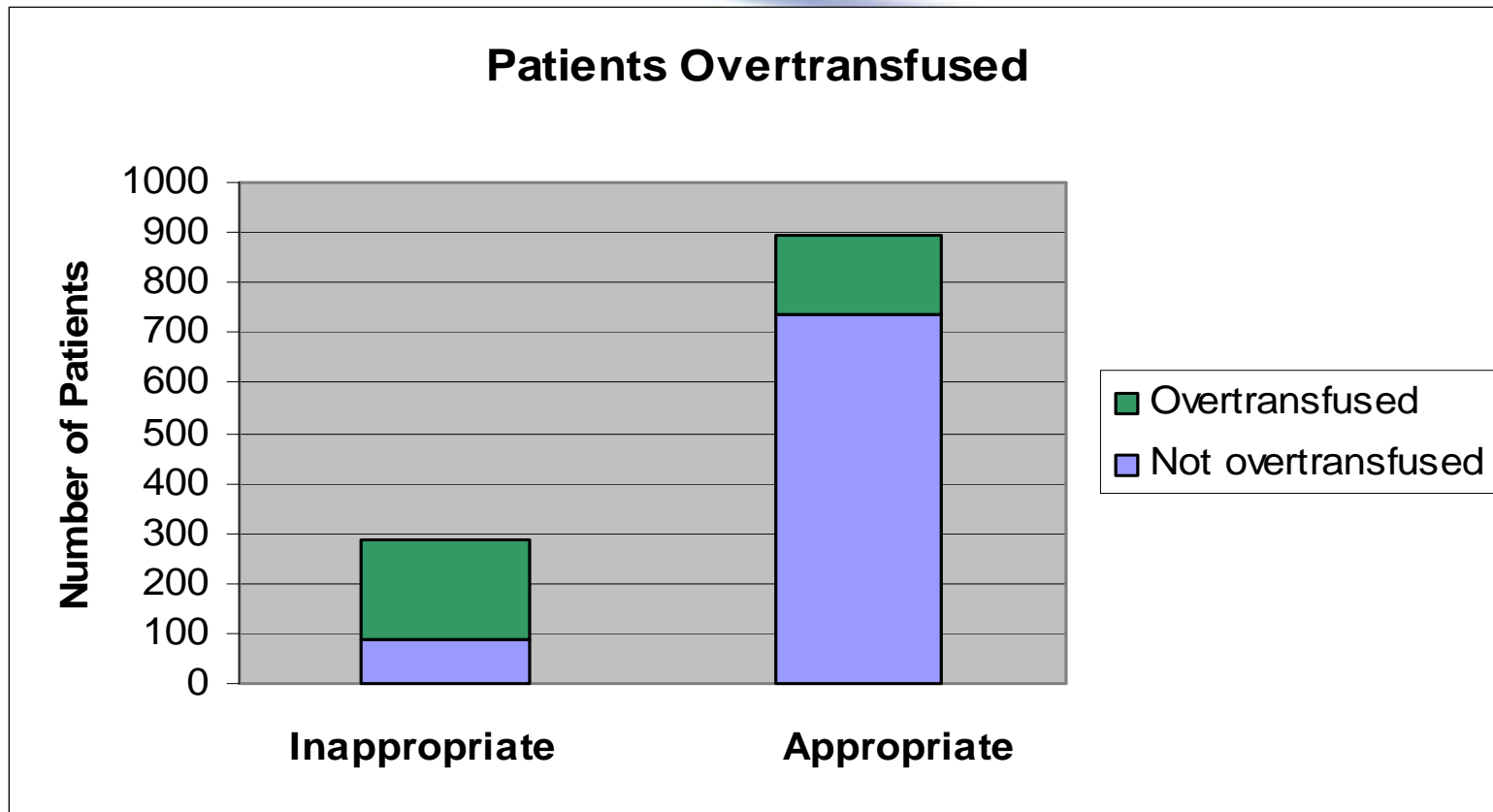
# Results

- N = 1215 data set
- Inappropriate use 19% (corrected)
- Over transfusion rate 29%



## Transfusion By Threshold Group

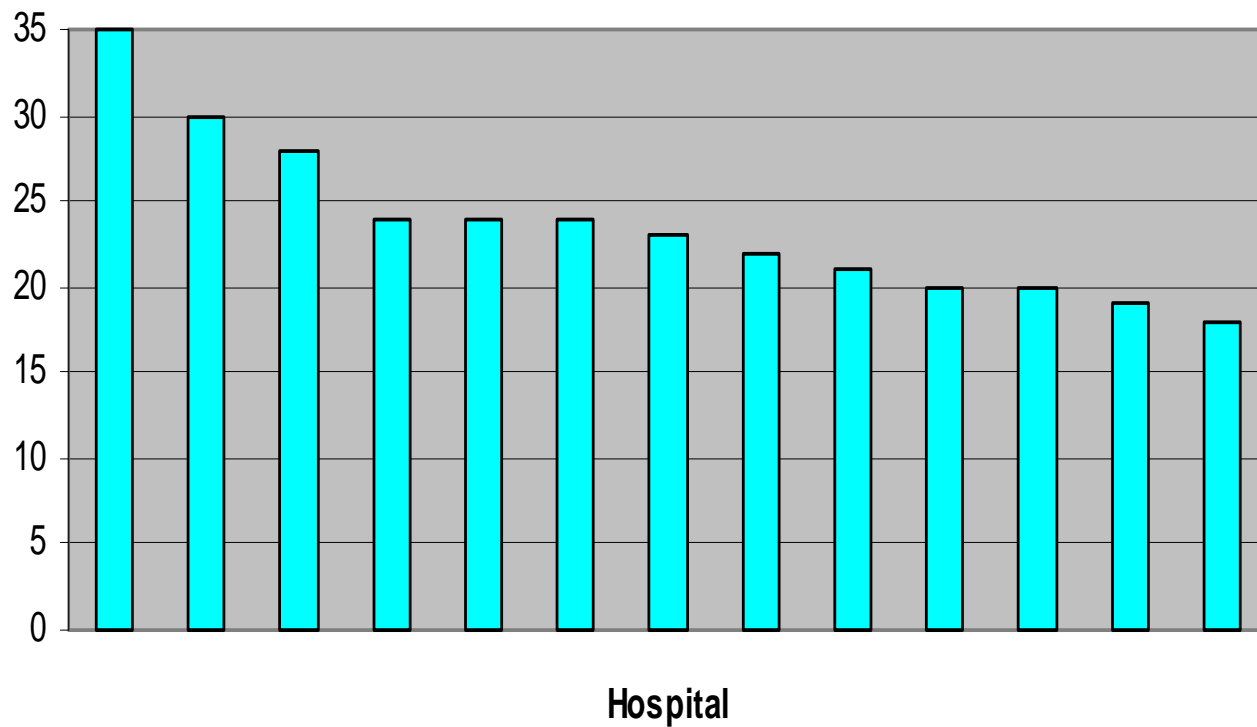




Category of Transfusion



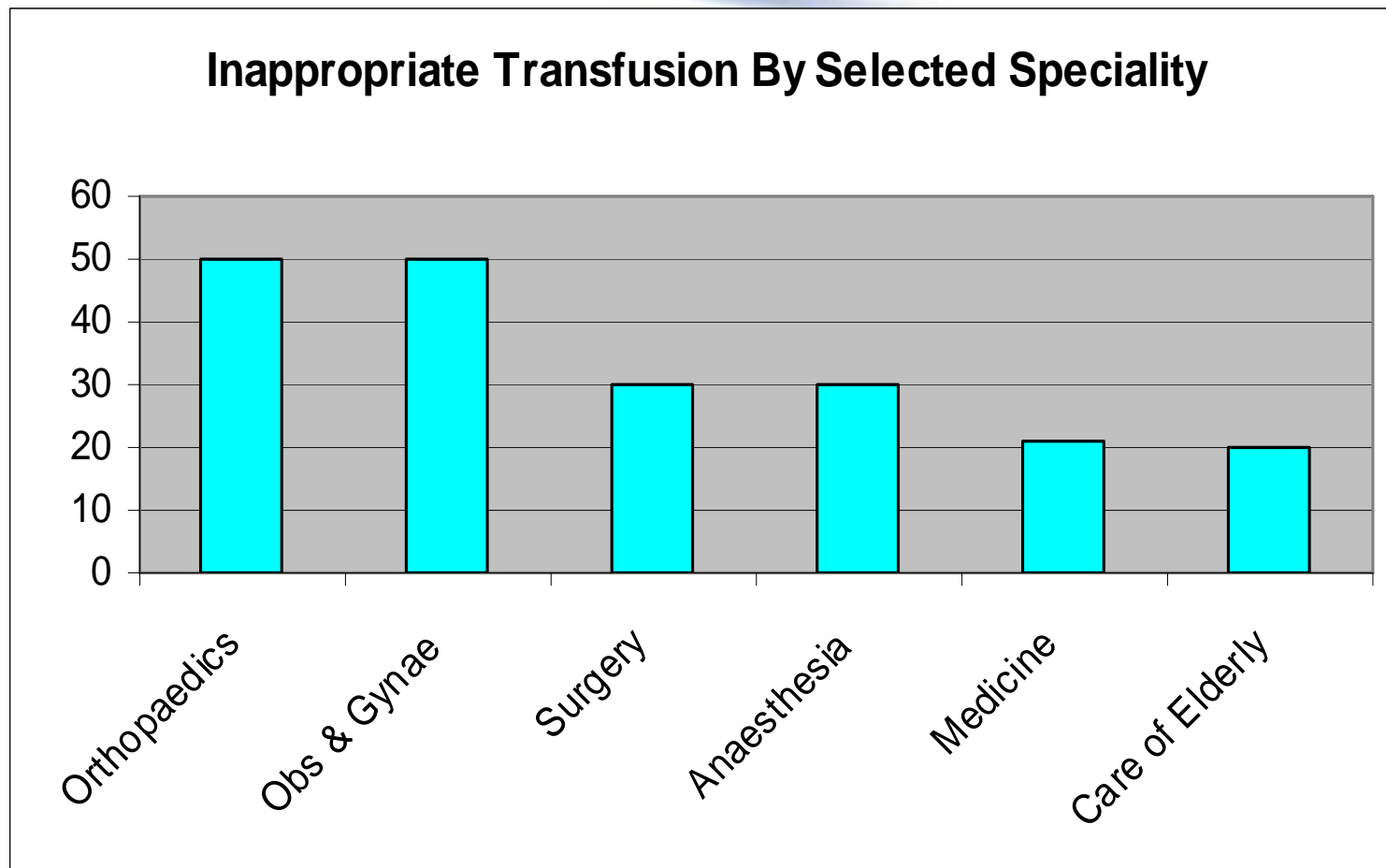
Inappropriate Transfusion Rates By Hospital



(Range 18% to 35%)

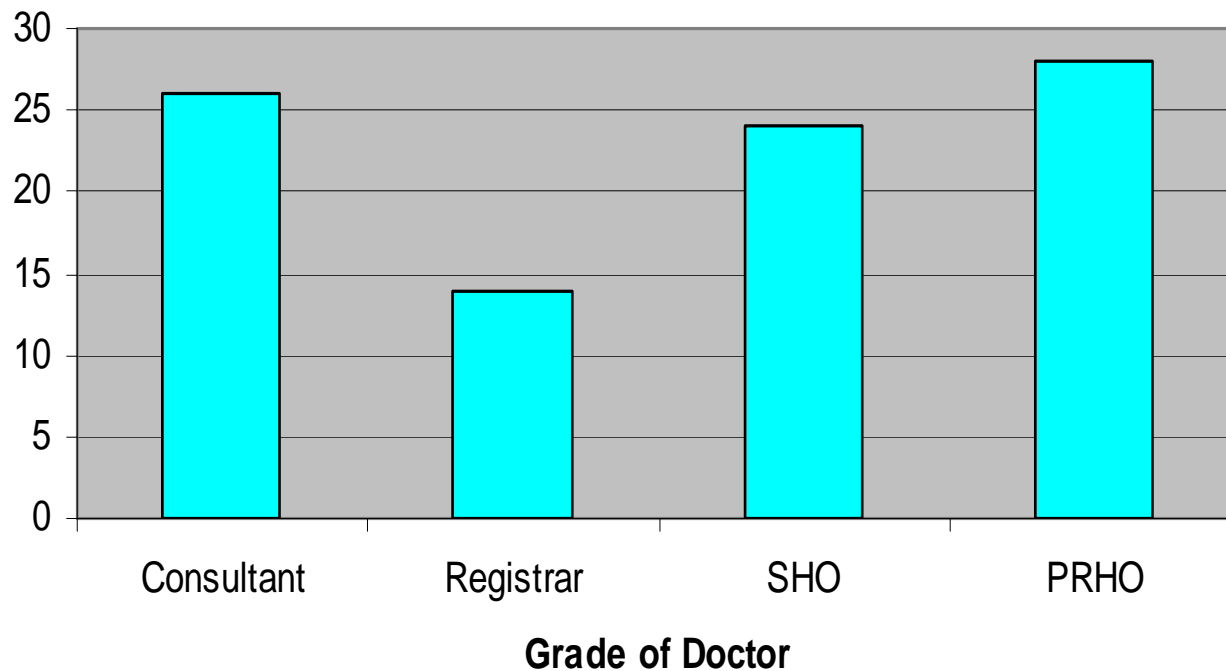


### Inappropriate Transfusion By Selected Speciality





### Inappropriate Transfusion By Grade Of Doctor



(Range 13% to 28%)



- Female patient 33 years, admitting condition increasing severity right sided abdo pain 3/7
- Hb on admission 8.9, MCV 67, no surgery
- Pre transfusion Hb 7.9, transfused 2 units, post transfusion Hb 9.9
- Hb before discharge 9.9, discharged on day of transfusion

Scored: Inappropriate transfusion

Scored: Over transfused



- Female patient 41 years, D&C four days prior to admission
- Abdominal pain/slight PV bleeding
- Primary biliary cirrhosis 2001, breast carcinoma 2001, in remission
- Hb on admission 11.2, MCV 92, no surgery
- Pre-transfusion Hb 8.6, bleeding, top-up with 2 units packed cells
- Transfused 2 units, post-transfusion Hb 10.8
- Total number of units transfused 2
- Hb before discharge 10.8
- Discharged on day of transfusion.

Scored: Inappropriate transfused

Scored: Over-transfused



- Female patient 24 years. Missed miscarriage
- Hb on admission 13.9, MCV 90.2
- Procedure – evacuation of uterus
- Documented evidence of heavy PV bleeding
- Decision re transfusion not documented
- Pre-transfusion Hb 7.8
- Transfused 2 units
- Post-transfusion Hb 10.4
- Discharged post-transfusion, recalled next day for post-transfusion Hb check.

Scored:           Appropriate transfusion

Scored:           Not over-transfused



- Male patient 43 years
- gi stromal tumour, current chemotherapy
- Hb on admission 9.5, MCV 79
- Pre transfusion Hb 9.5
- Two units transfused
- Post transfusion Hb 11.5

Scored: Appropriate transfusion

Scored: Not over transfused



# Recommendations

1. Optimise patient's Hb prior to admission
2. Check Hb pre-transfusion
3. Only consider transfusion option when below threshold
4. Pay particular attention to categories 1 and 2
5. Single unit transfusion
6. Education, education, education

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# Clinical Practice Guidelines

Information Resource

[www.crestni.dhsspsni.gov.uk](http://www.crestni.dhsspsni.gov.uk)

CREST

Better Use of Blood in Northern Ireland

Guidelines for Blood Transfusion Practice

Guidelines for Red Cell Transfusion (Adults)



# Blood Stocks Management

- UK BSMS
- Unique sharing of data across 11 client hospitals and supplying Blood Centre
- First six months 05/06 - 7.9%
- First six months 06/07 – 6.8%



# Case Study

	03/04	04/05	05/06	06/07	07/08
Time expired wastage	916	651	539	419	417
% Wastage	6.65	4.87	4.30	3.19	3.89
Cost (Stg)	88,335	64,295	54,773	43,720	44,010



# Factors in Red Cell Reduction

1. Compliance with MSBOS
2. Electronic blood release and issue
3. Minimum stock holding and inventory management
4. Monthly statistics to individual directorates and teams
5. Challenging inappropriate requests
6. Zero tolerance

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# Training and Assessment of Staff

## Information Resource

- [www.learnbloodtransfusion.com](http://www.learnbloodtransfusion.com)
- On line recording and assessment scheme (ORAS)
- Copyright Scottish National Blood Transfusion Service (SNBTS)



- Modular based – level 1, level 2, level 3
- Level 1, level 2 >4,000 healthcare staff trained and certified
- Level 3 clinical decision making/ appropriate red cell transfusion prescribing
- Mandatory for newly qualified doctors in NI level 1, level 2
- Certificate to Clinical Supervisor before permission to practice
- Integrated into DOTS (Doctors on Line Training Scheme)

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# National Patient Safety Agency

Patient Safety Notice “Right Patient,  
Right Blood”

“..... competency assessment for all  
healthcare staff involved in clinical blood  
transfusion process ..... by 31/01/09”

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# Case Study

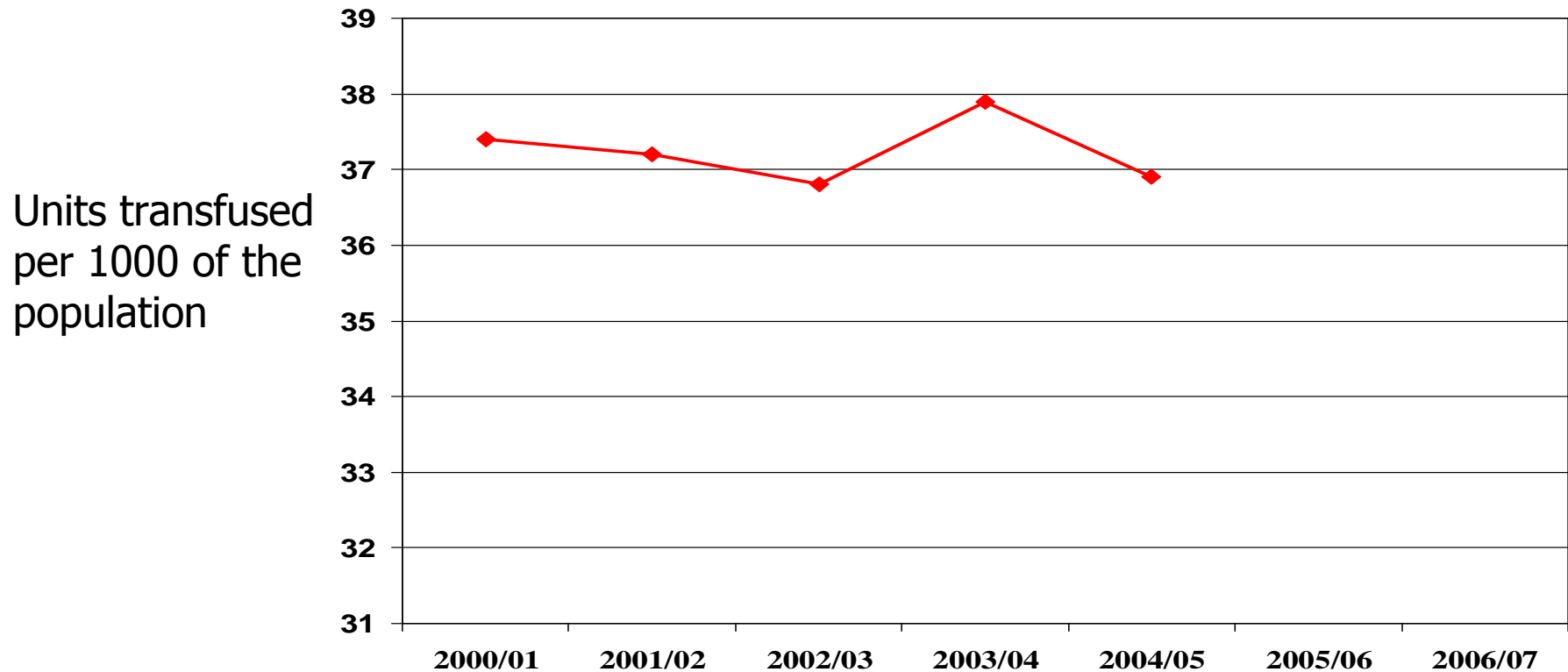
Year	03/04	04/05	05/06	06/07	07/08	First 5 mnts 08/09	Est 12 mnts 08/09
Red cell issues	13,758	13,346	12,563	11,935	10,529	4,155	10,972
% reduction		-3.0	-6.2	-5.3	-11.8	+0.4	(+0.4)

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## Units Issued Since Audit Launched 2005



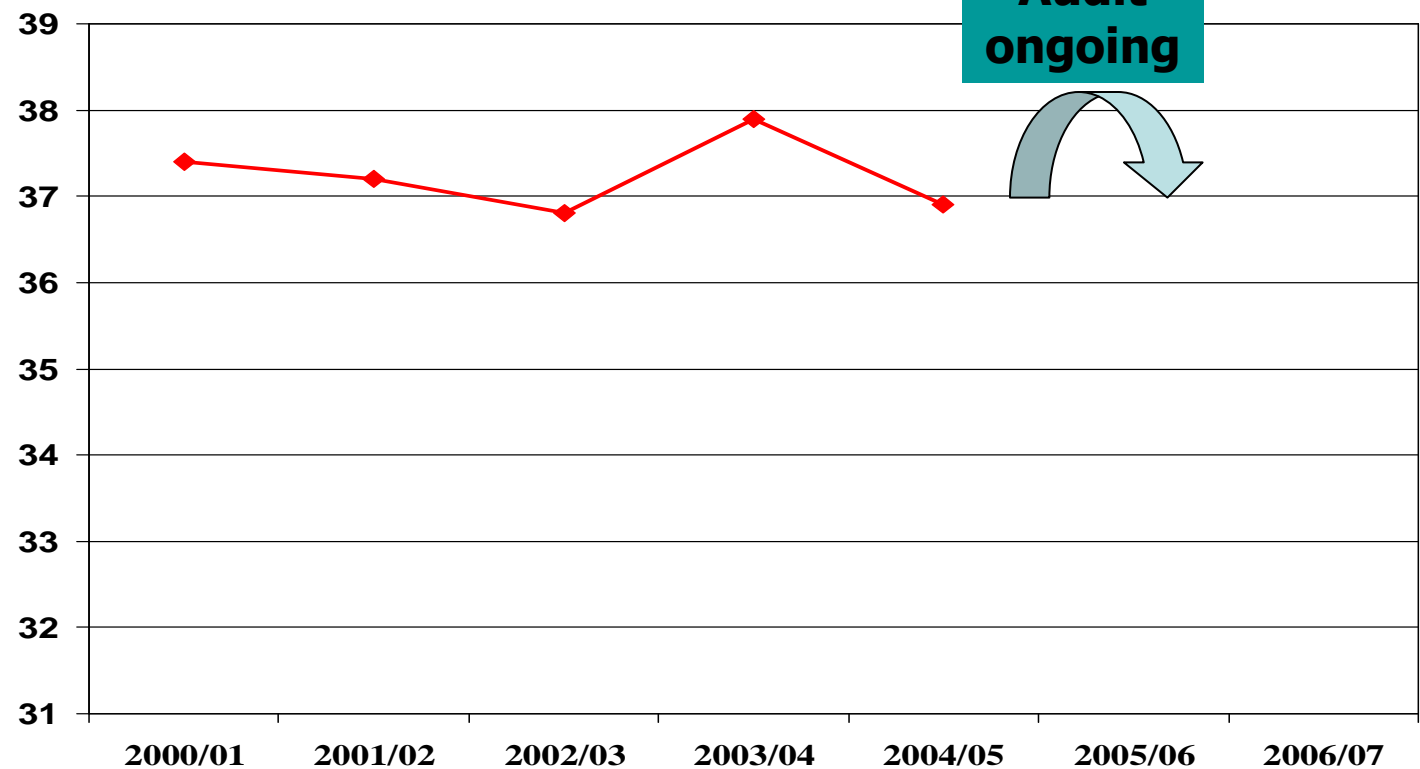
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## Units Issued Since Audit Launched 2005

Units transfused per 1000 of the population



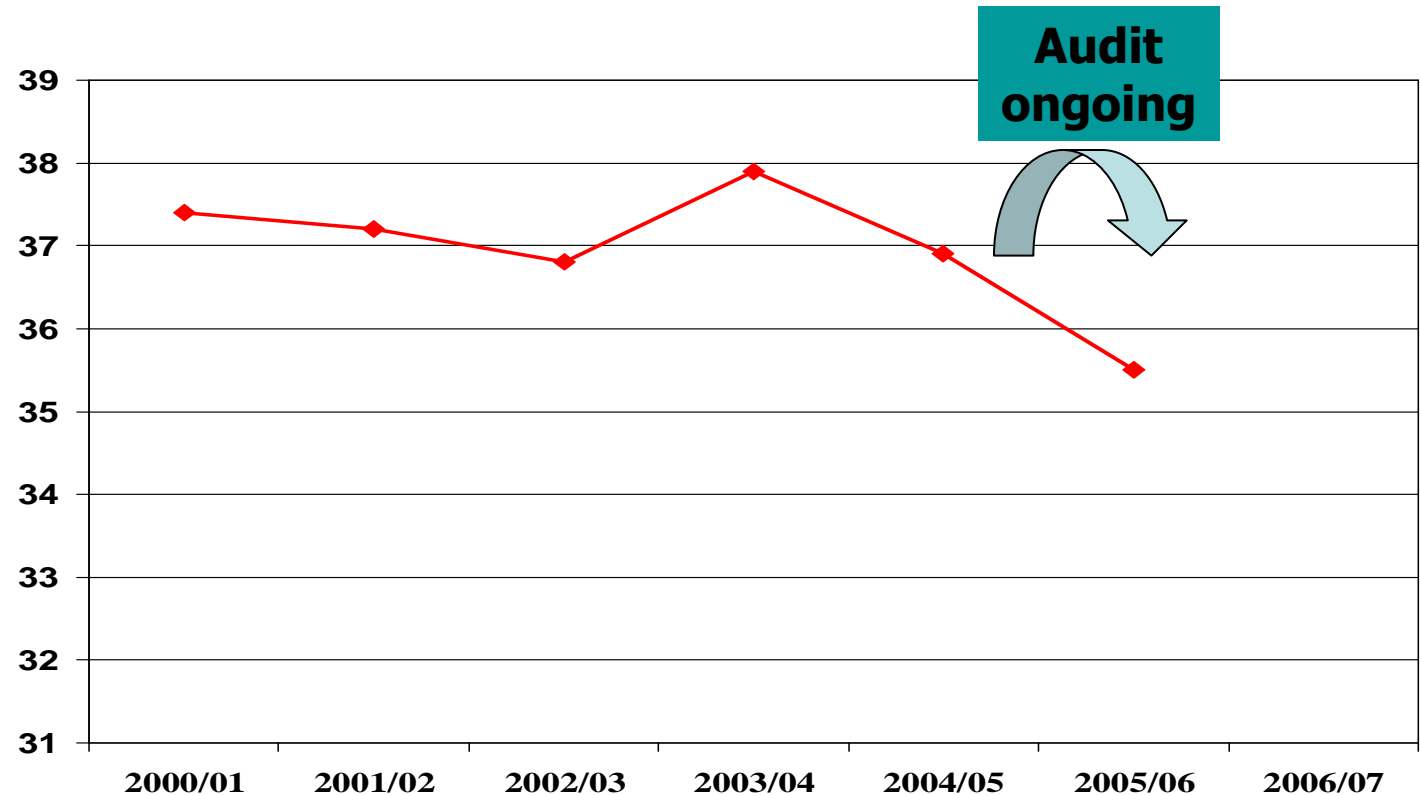
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## Units Issued Since Audit Launched 2005

Units transfused per 1000 of the population

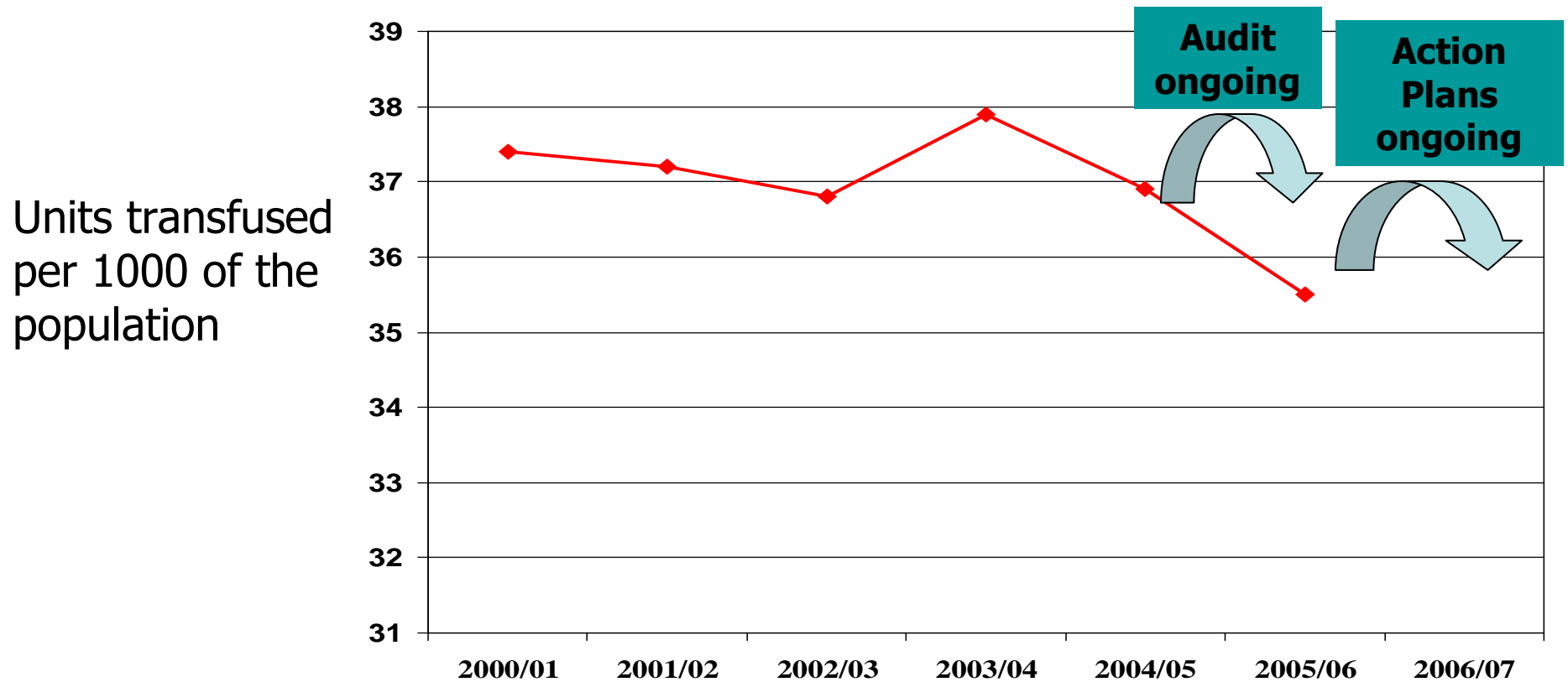


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## Units Issued Since Audit Launched 2005



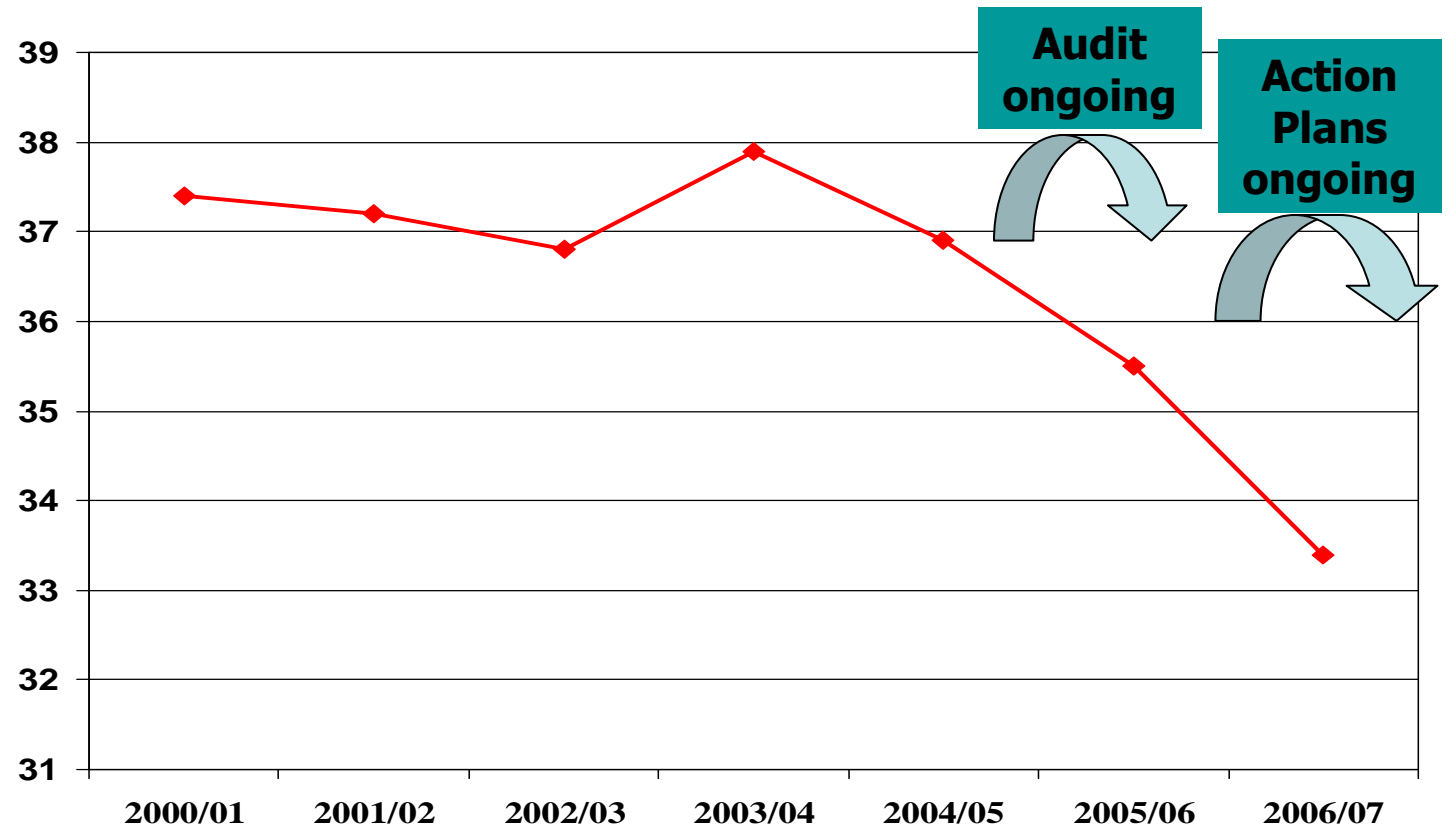
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## Units Issued Since Audit Launched 2005

Units transfused per 1000 of the population



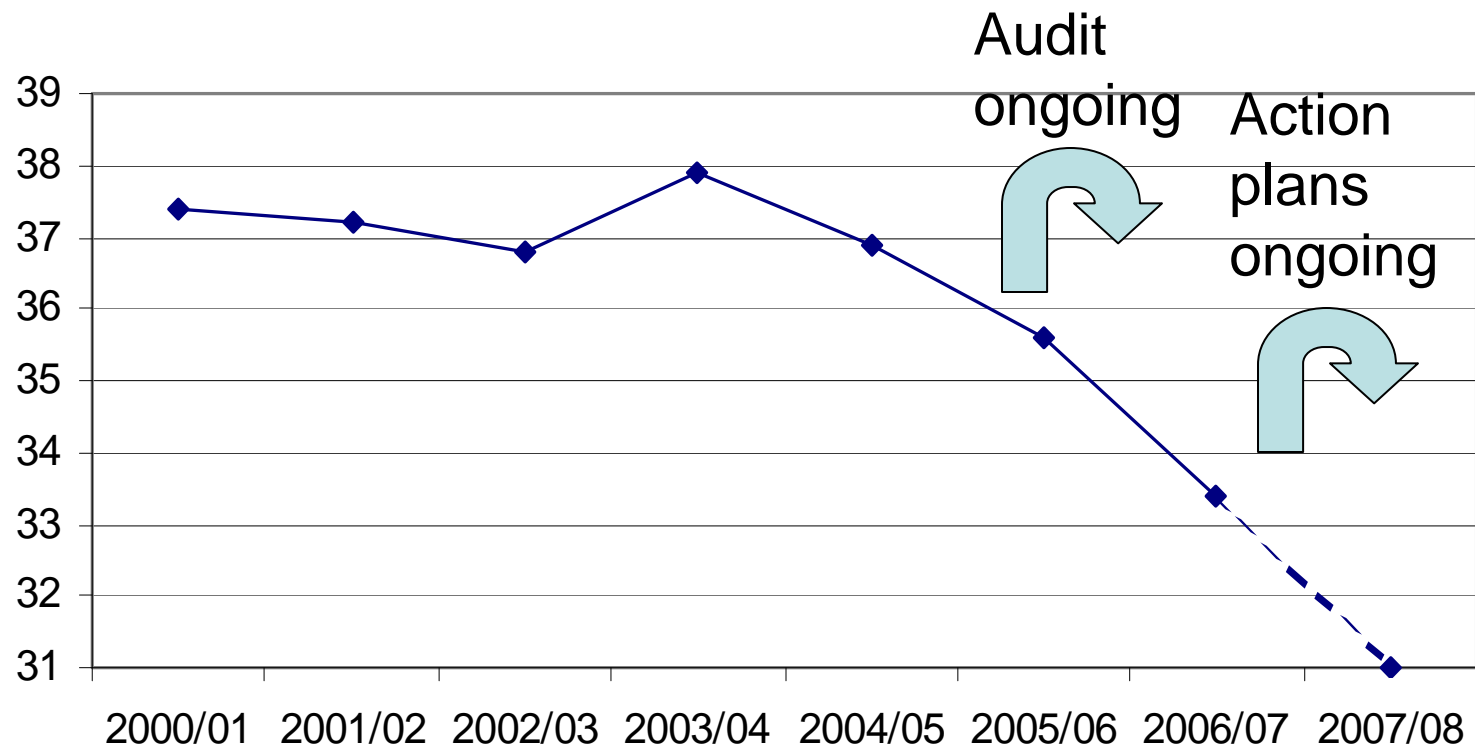
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### Units Issued Since Audit Launched 2005

Units transfused per 1000 of the population





## Further Work Planned

- Re-audit Regional Appropriateness of Blood Transfusion  
Target: 0-5% inappropriate transfusion rate  
0-5% overtransfusion rate
- Audit topic: Regional Pre-Hospital Anaemia Audit