National Comparative Audit
of Blood Transfusion

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Blood and Transplant

2016 Audit of Red Cell & Platelet Transfusion in Adult Haematology Patients

South West RTC

Caring Expert Quality

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Why was this audit necessary?

- Up to 65% of all platelet transfusions and 28% of all red cell transfusions are given to haematology patients

- Previous audits have shown a significant use outside of recommended guidelines

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Facts and Figures

This is the largest audit of haematology patients ever reported - 4649 patients from 170 sites

A red cell transfusion was audited on average every

10 minutes for 1 month, a total of 4,328

A platelet transfusion was audited on average every

24 minutes for 1 month, a total of 1,781

15% of all red cells and **45%** all platelet units requested by participating hospitals in January were used by audited patients

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Key Findings

Most transfusions were given to patients with chronic bone marrow failure.

59% of red cell transfusions and **53%** of prophylactic platelet transfusions.

Improved prophylactic platelet use in reversible bone marrow failure compared to 2010 audit.

54% in 2010 to **62%** in 2016 were given when the count was 10 x 10^9/L or less.

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The Audit

Two parts

- Organisational audit to assess local guidelines

- Clinical audit to assess practice

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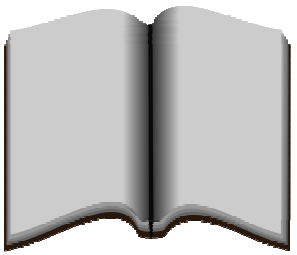
Organisational Audit

13% of hospitals did not have written transfusion guidelines (**Organisational standard 1**).

Hospital guidelines did not always agree with national guidelines.

Approximately **30%** used a higher haemoglobin threshold for patients without additional risk factors and for patients with cardiovascular disease.

Only **16%** stated that prophylactic platelet transfusions were not required in chronic bone marrow failure.



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Clinical Audit : Who did we audit?

- Any adult with a known haematological malignancy or myeloid failure syndrome
- Transfused with red cells or platelets in January 2016
- Patients could be audited for both red cell and platelet transfusions

Clinical Audit : Number of transfusions

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	RBC	Platelets
National	4328	1781
Regional	483	149
Derriford Hospital	56	10
Dorset County Hospital NHS Foundation Trust	18	6
Gloucestershire Hospitals NHS Foundation Trust	28	10
Musgrove Park Hospital	23	8
North Bristol NHS Trust	30	4
Northern Devon Healthcare NHS Trust	22	3
Poole Hospital NHS Foundation Trust	26	9
Royal Cornwall Hospital	28	13
Royal Devon and Exeter NHS Foundation Trust	42	11
Royal United Hospital	33	12
Salisbury NHS Foundation Trust	21	11
The Great Western Hospital	32	10
The Royal Bournemouth Hospital	34	13
Torbay and South Devon NHS Foundation Trust	22	5
University Hospitals Bristol NHS Foundation Trust	42	23
Weston Area Health NHS Trust	6	1
Yeovil District Hospital	20	0

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Red Cell Transfusions

59% (2551/4325) of red cell transfusions were for chronic anaemia

Only **75%** of red cell transfusions were considered appropriate

Red Cell Transfusion – Appropriate Use

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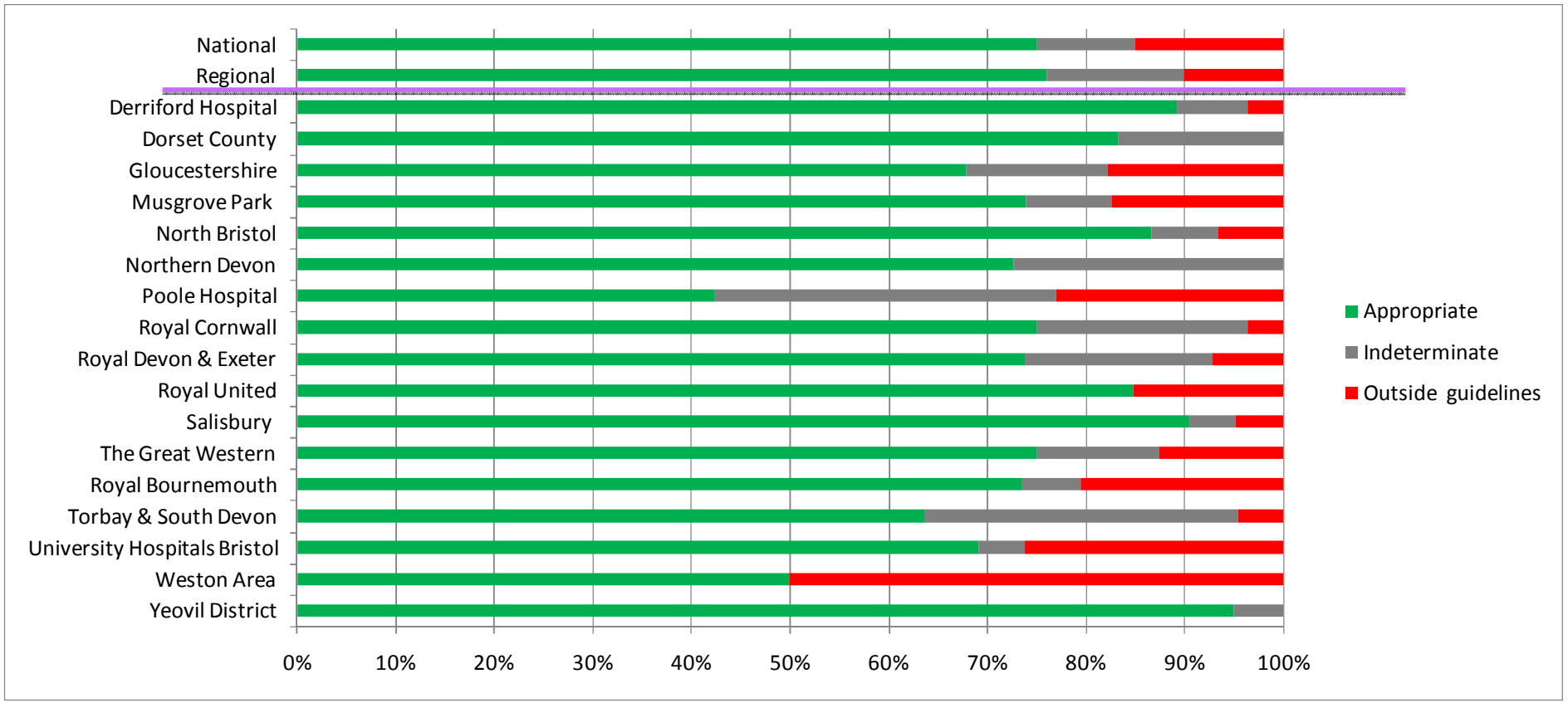

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Red Cell Transfusion Thresholds

Only **17%** (163/955) of patients with reversible bone marrow failure and no additional risk factors were transfused when their Hb was 70g/L or lower **(Red cell standard 2).**

Only **30%** (18/60) of patients who were anaemic and had cardiovascular disease were transfused when their Hb was 80g/L or lower **(Red cell standard 3).**

Red Cell Transfusion Threshold where Hb >70g/L

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n = 955	n	%
National	792	83%
Regional	77/108	71%
Derriford Hospital	6/9	67%
Dorset County Hospital NHS Foundation Trust	-	-
Gloucestershire Hospitals NHS Foundation Trust	5/5	100%
Musgrove Park Hospital	3/8	38%
North Bristol NHS Trust	2/2	100%
Northern Devon Healthcare NHS Trust	-	-
Poole Hospital NHS Foundation Trust	6/8	75
Royal Cornwall Hospital	2/2	100%
Royal Devon and Exeter NHS Foundation Trust	2/2	100%
Royal United Hospital	5/6	83%
Salisbury NHS Foundation Trust	1/1	100%
The Great Western Hospital	11/15	73%
The Royal Bournemouth Hospital	19/21	90%
Torbay and South Devon NHS Foundation Trust	0/1	0%
University Hospitals Bristol NHS Foundation Trust	12/25	48%
Weston Area Health NHS Trust	3/3	100%
Yeovil District Hospital	-	-

Red Cell Transfusion – Single units given

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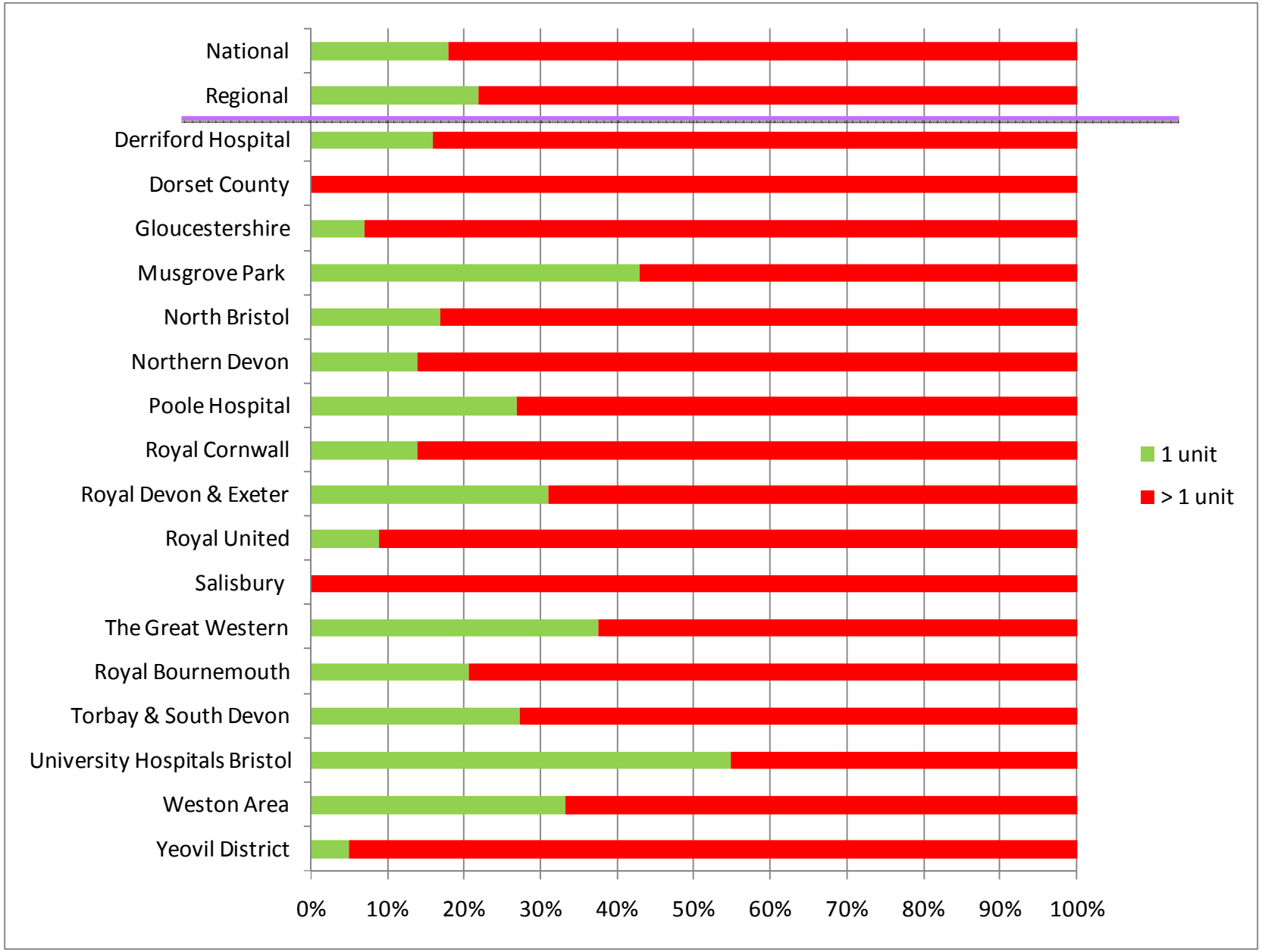

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Red Cell Transfusions for Patients weighing less than 50kg

Number of units transfused	Inpatient (84)	Day Patient (122)
One	28 (33%)	27 (22%)
Two	47 (56%)	88 (72%)
Three	6 (7%)	7 (6%)
Four	2 (2%)	-
Five	1 (1%)	-

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Platelet Transfusions

77% (1379/1781) were prophylactic and within this group **53%** were given to patients with chronic bone marrow failure

9% (160/1781) were prior to a procedure

10% (182/1781) were therapeutic

3% (60/1781) reason for transfusion was unknown

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Prophylactic Platelet Transfusions

72% (459/638) of prophylactic platelet transfusions were considered appropriate in reversible bone marrow failure

62% (289/474) of patients received a prophylactic platelet transfusion for reversible bone marrow failure without additional risk factors, when the count was less than or equal to 10 x 10^9/L.

(Platelet standard 1). This was **54%** in the 2010 audit.

Only **43%** (273/639) of prophylactic platelet transfusions were considered appropriate in chronic bone marrow failure **(Platelet standard 3).**

Prophylactic platelets - appropriate use in Reversible Bone Marrow Failure

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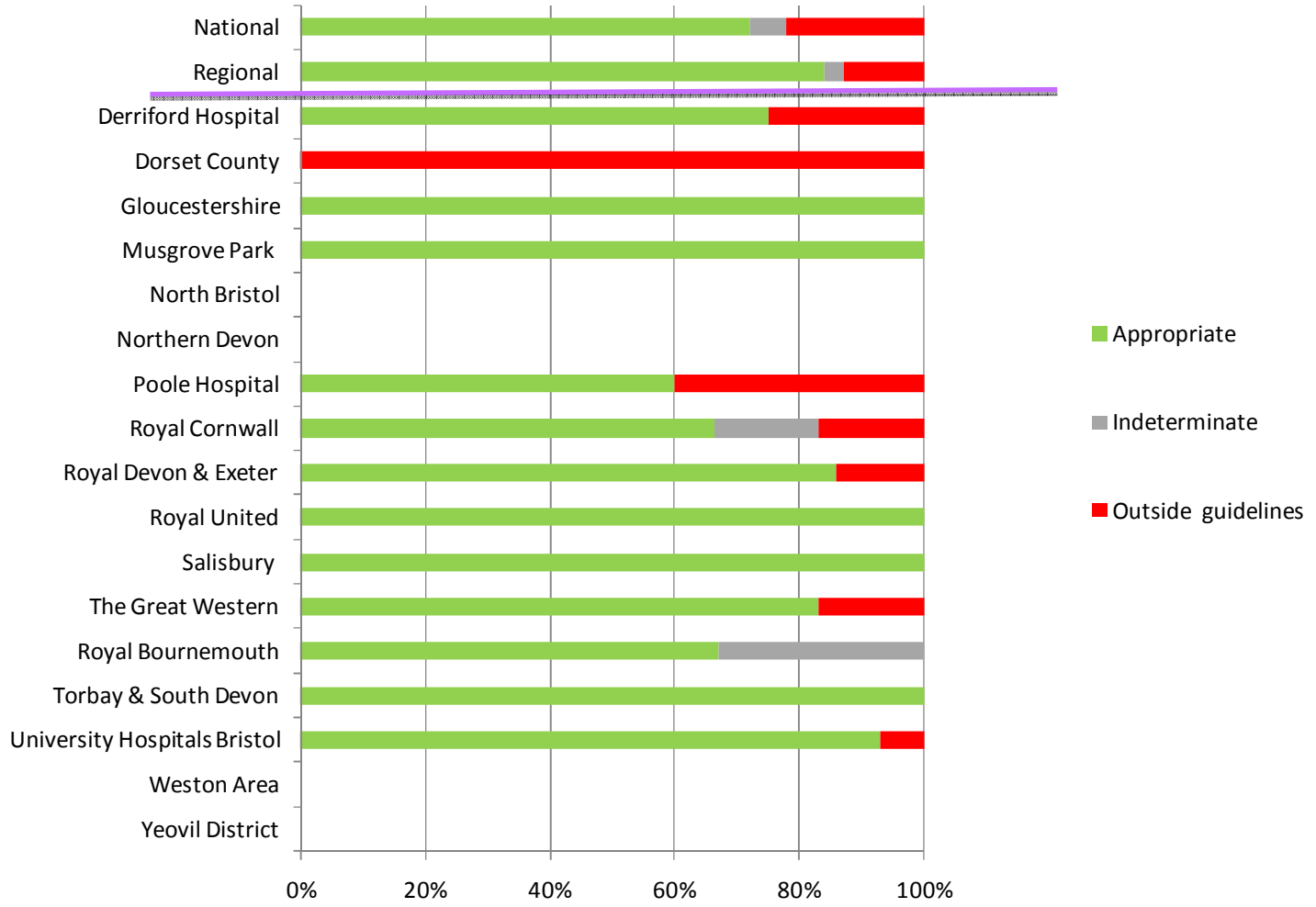

Prophylactic platelets – Appropriate Use in Chronic Bone Marrow Failure (Intensive & non-intensive)

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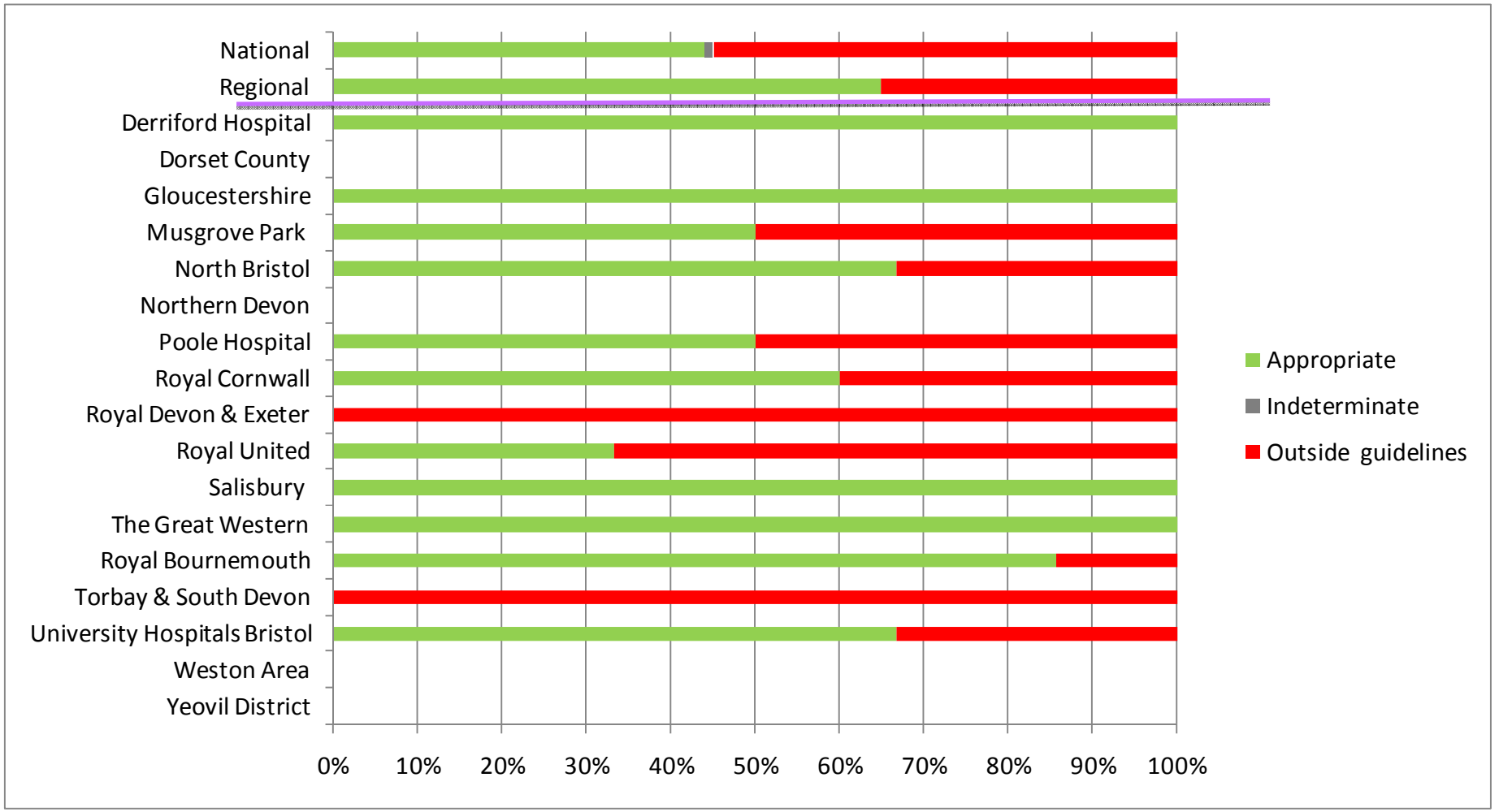

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Summary of Appropriateness

	Audited episodes in each category	Appropriate	Indeterminate	Outside guidelines
Red cell Transfusion	100%	75%	10%	15%
Platelet Transfusion				
Prophylactic	77%	55%	8%	37%
Reversible BMF		72%	6%	22%
Chronic BMF*		43%	1%	56%
Pre-procedure	9%	61%	20%	19%
Therapeutic	10%	87%	7%	6%
Unclear	3%	0%	100%	0%

* Not receiving intensive treatment

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Conclusions

- Haematological patients are high blood users
- Local hospital guidelines are frequently discrepant with national guidelines and contribute to inappropriate transfusion practice.
- Patients with chronic bone marrow failure receive more blood than those with reversible bone marrow failure
- Single unit red cell transfusions are uncommon
- Single unit prophylactic platelet transfusions would increase if platelet counts were measured prior to transfusion of further units.

Key Recommendations

Improving local guidelines

1. Local hospital guidelines must be easily available and reflect national guidelines for blood transfusion.

2. Local hospital guidelines should state that prophylactic platelet transfusions are not required:
    a. Prior to bone marrow aspirates and trephine
    b. In stable patients with chronic bone marrow failure.

3. Local hospital guidelines should prompt risk assessment of patients for Transfusion Associated Circulatory Overload (TACO).

Key Recommendations

Improving local audit

1. Information technology solutions are required to allow regular non labour intensive audit of transfusion practice.

Key Recommendations

Improving clinical practice

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1. The reason for transfusion should be clearly documented in the patient's record including any individual threshold agreed for that patient.
2. In the absence of active bleeding, use the minimum number of red cell units required to achieve a target haemoglobin and consider a single unit transfusion.
3. One adult therapeutic dose of platelets is required for prophylaxis. Pre-procedure consider the size of the patient, previous platelet count increments and the target platelet count.