NHS Blood and Transplant

Use of Blood in Medical Patients 2011 Audit

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Why audit the use of red cells in medical patients?

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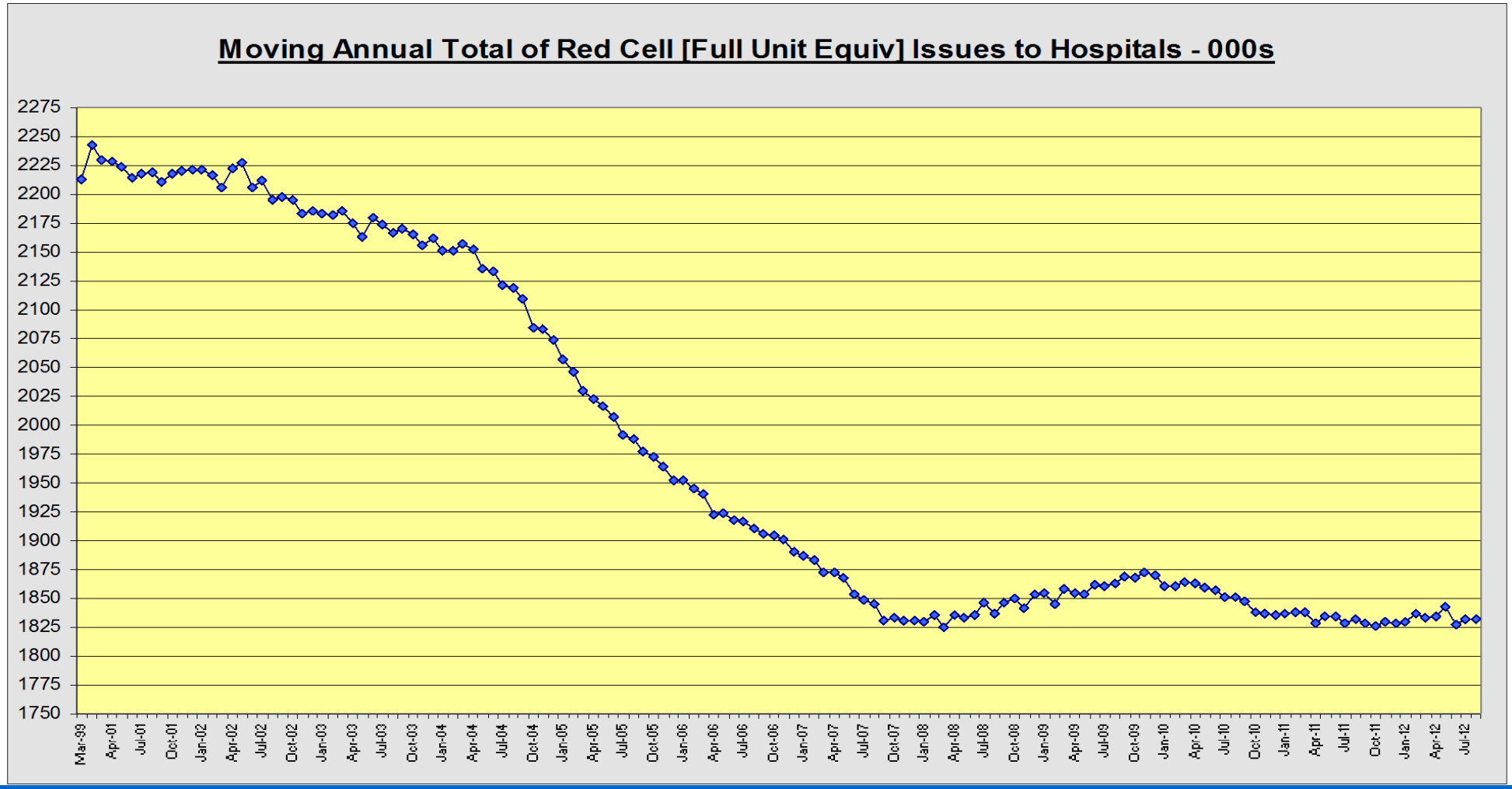

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Falling Use of Blood in Surgical Patients

Year of audit	Percentage of red cells transfused to medical patients	Percentage of red cells transfused to surgical patients
2000	52%	41%
2004	62%	33%
2008	64%	29%

Ten-year pattern of red blood cell use in the North of England
Tinegate et al Transfusion 2012

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Method

- All medical red cell transfusions in one week of choice during September to November 2011, and 1 in 3 haematology/oncology cases (age > 18 years, excluding patients transfused in A&E and ICU)
- Case notes and laboratory information was used to gather data
- Results returned using web-based audit tool
- 181 sites (90% of NHS sites) returned data on 9216 cases

Appropriate red cell use in medical patients with anaemia

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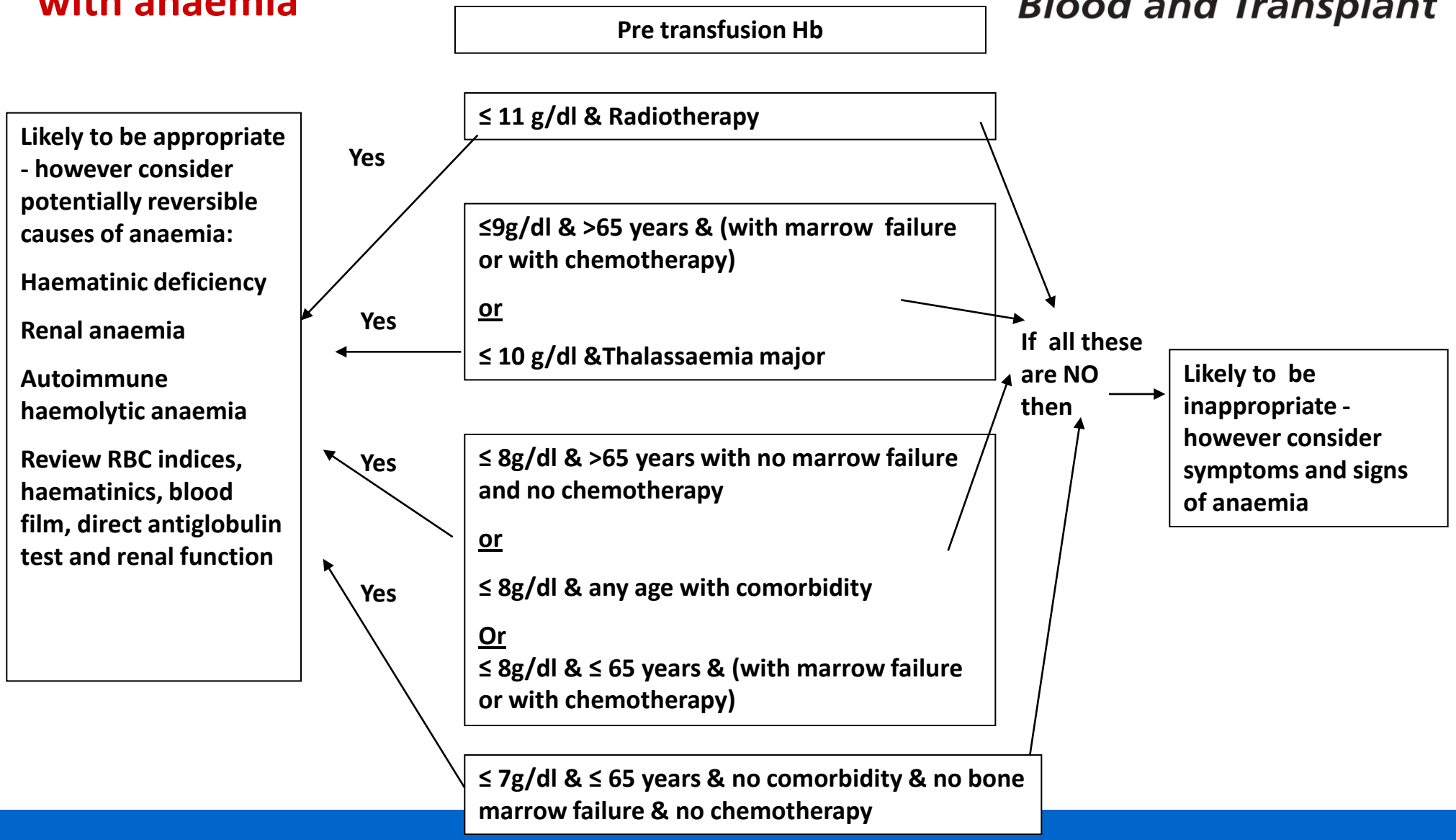

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Definition of possible potentially reversible anaemia

Iron deficiency = Ferritin ≤15 mcg/l (female) or ≤ 20 mcg/l (male) **or** Iron studies suggestive of TSAT ≤20 or TIBC ≥ 85 micromol/l **or** MCV ≤ 78fl (in those without haematinic results)

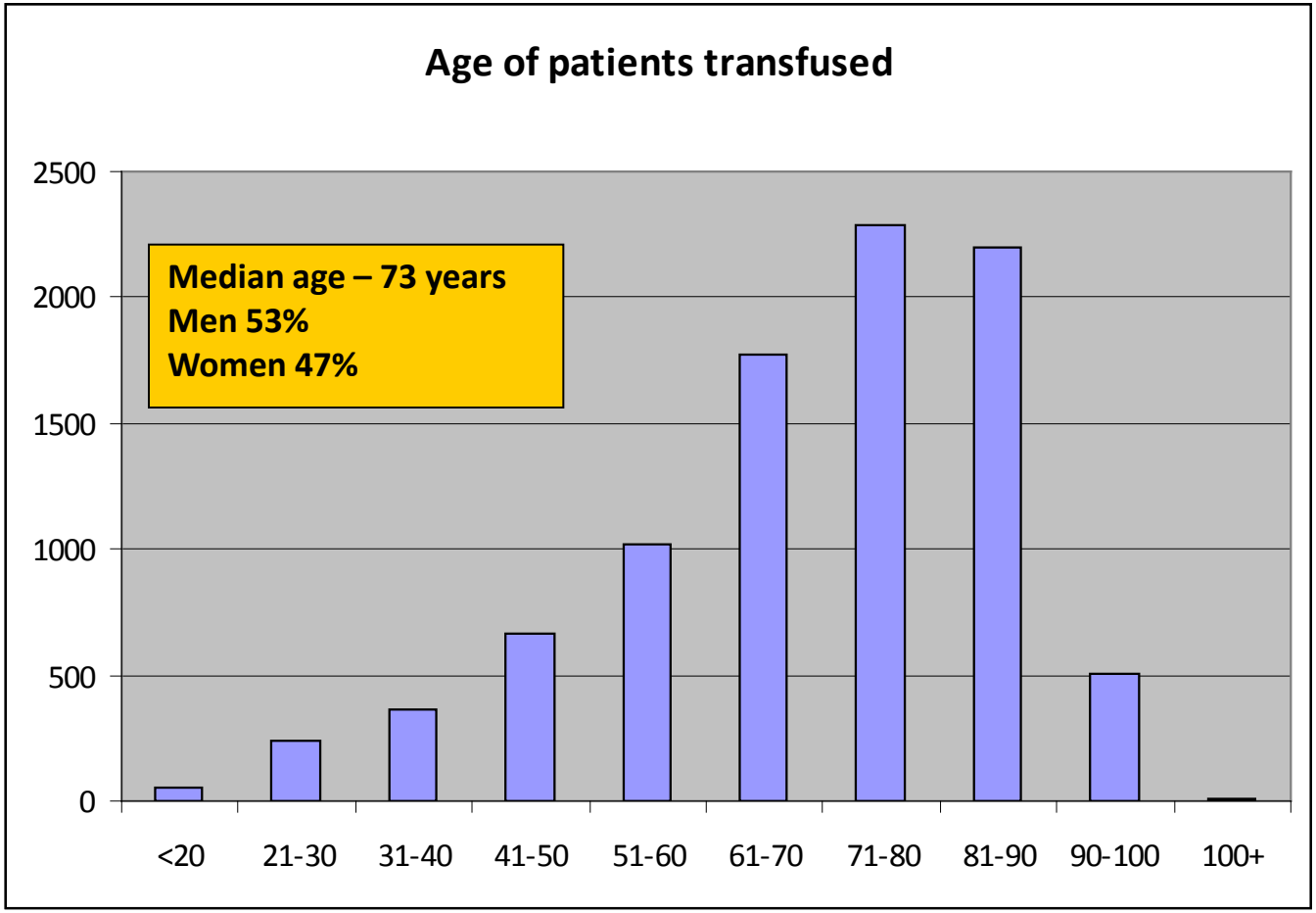
B12 deficiency = B12 ≤ 150 ng/l (pg/ml)

Folate deficiency = Serum folate ≤ 2mcg/l (ng/ml) **or** Red cell folate ≤ 80 mcg/l (ng/ml)

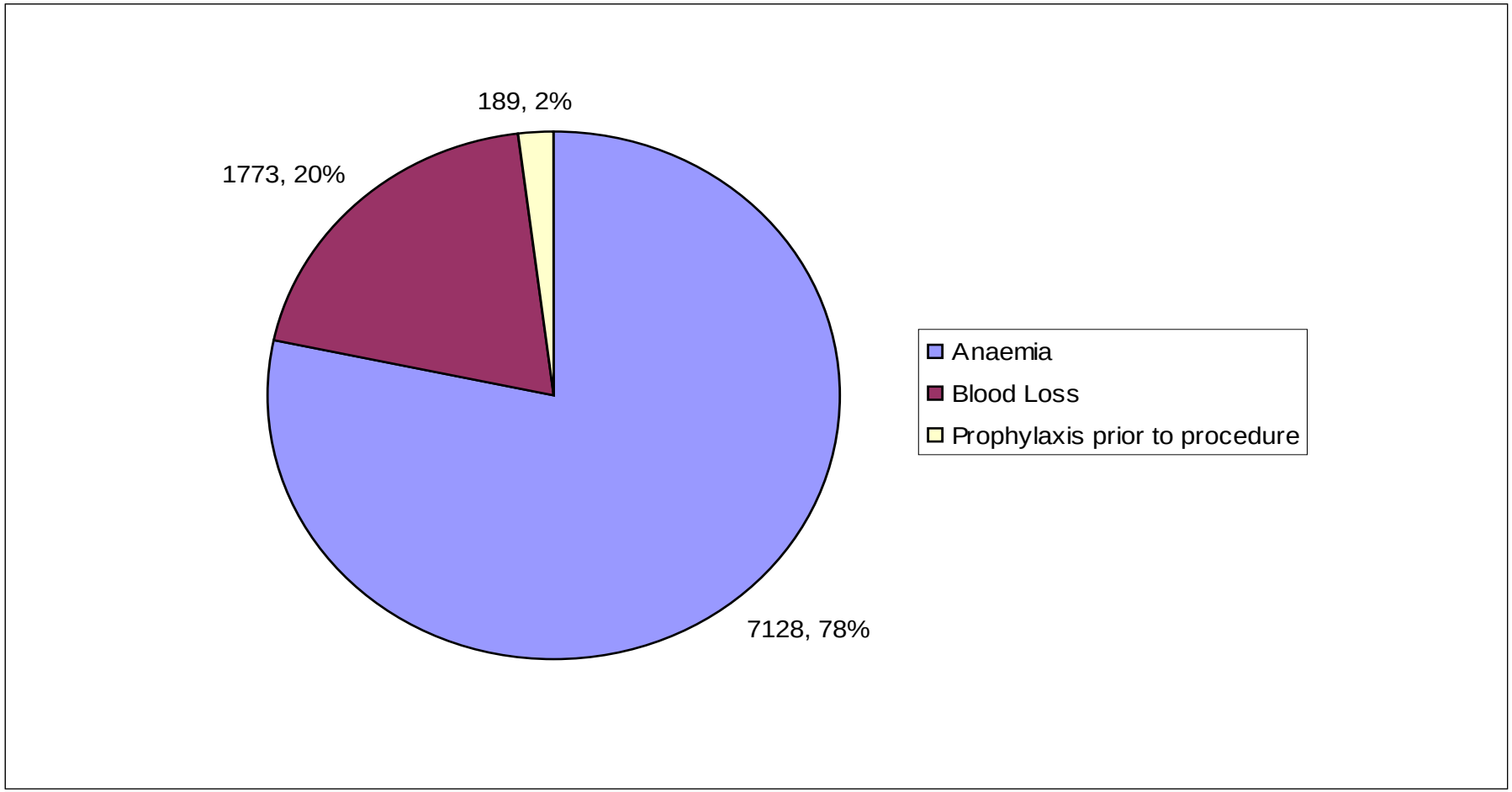
Autoimmune haemolytic anaemia = Either diagnosis of 'haemolysis – acquired autoimmune' or Direct Antiglobulin Test 'Positive' or grade 1 and above

Renal Anaemia = patients with calculated eGFR of ≤ 30 (Chronic Kidney Disease stage 4 to 5) with chronic renal failure as only diagnosis ticked and no other diagnosis

Demographics



Clinical Reason for Red Cell Use



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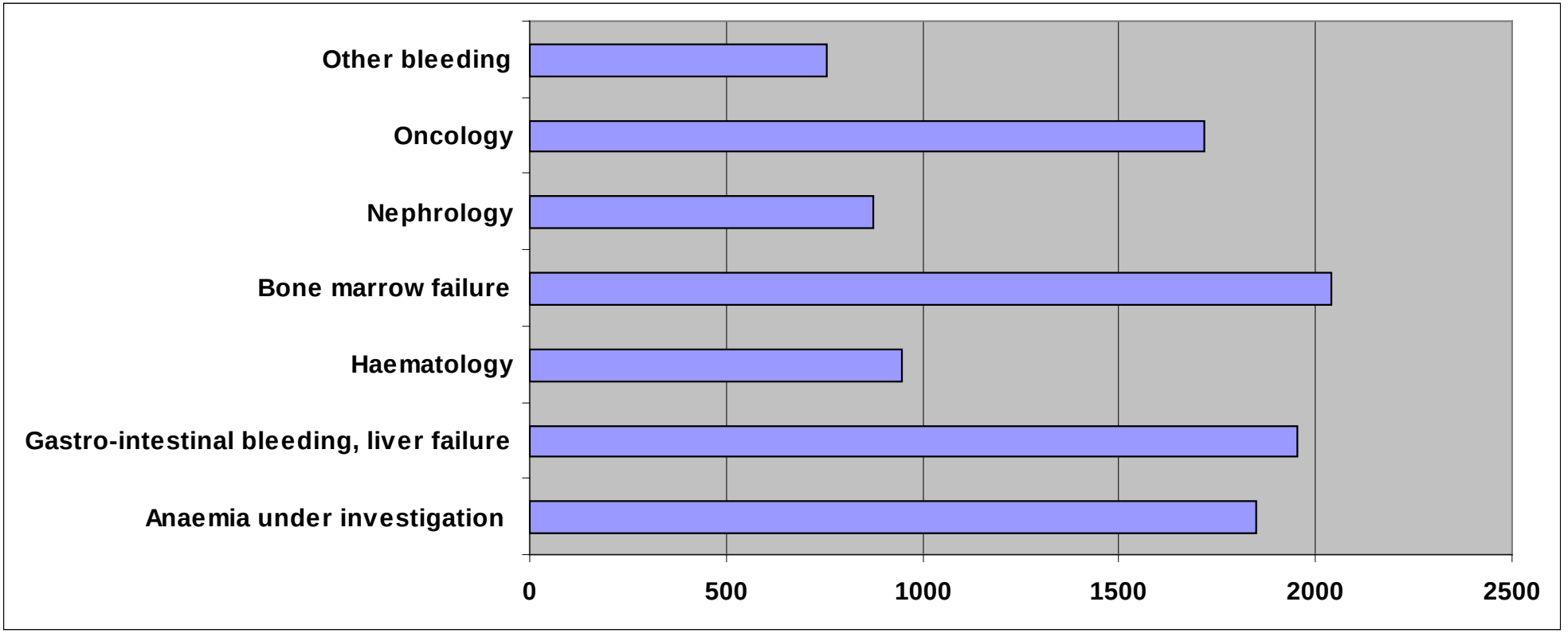
Reason for Transfusion



Pre and post transfusion Hb values

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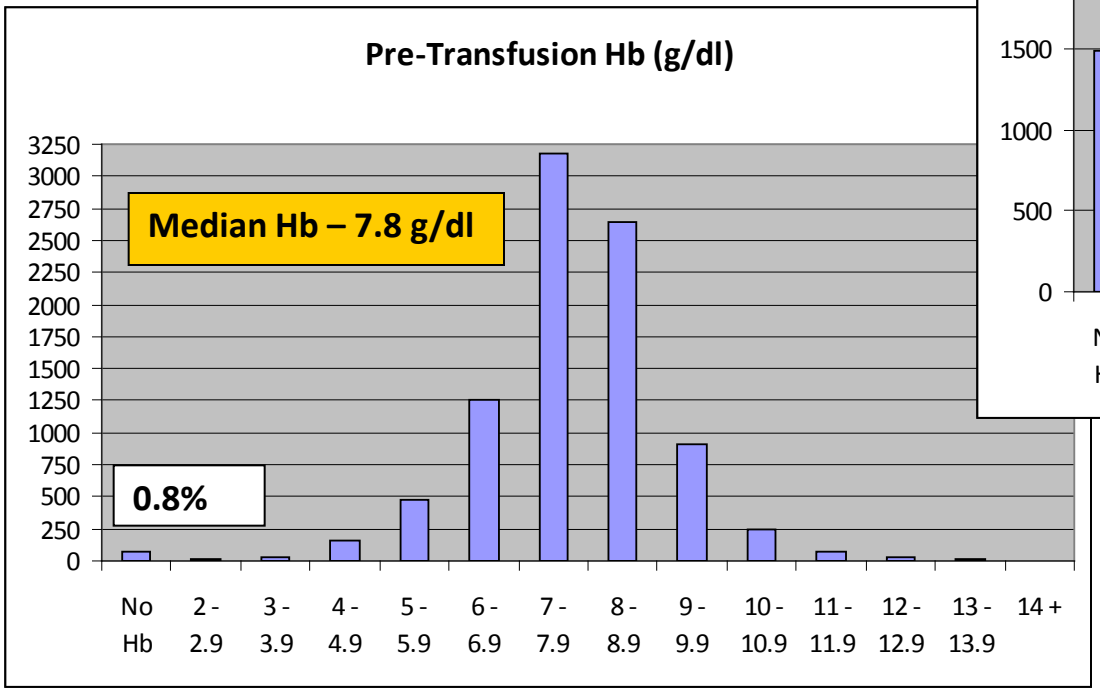
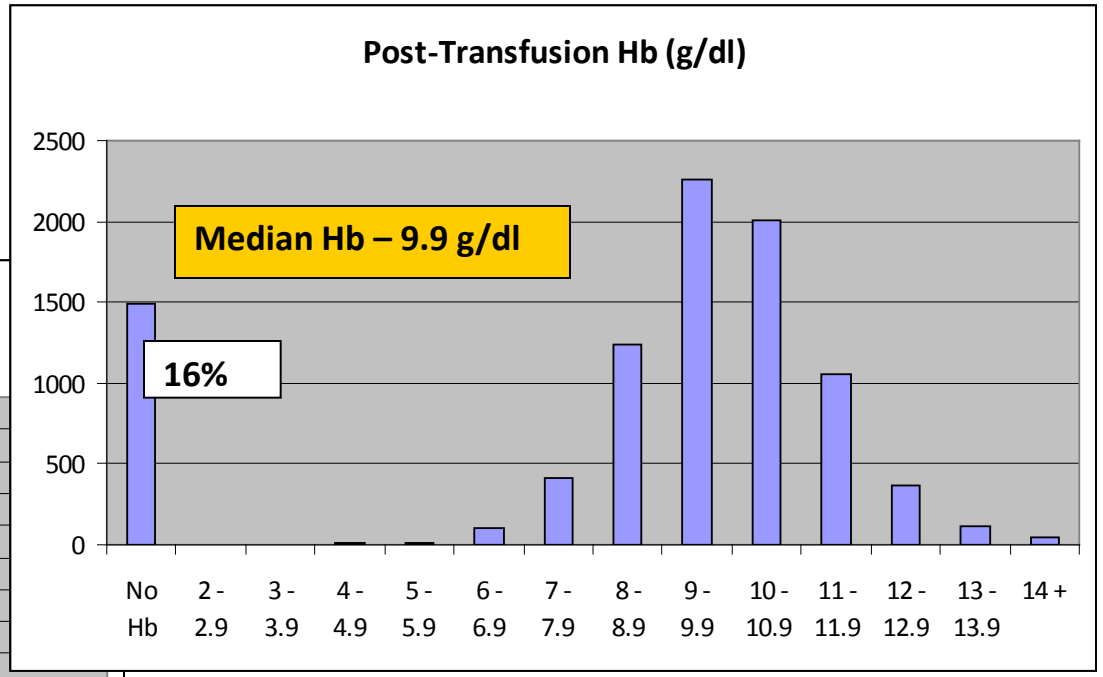
3.6% pre transfusion Hb > 10g/dl





5.9% post transfusion Hb > 12g/dl

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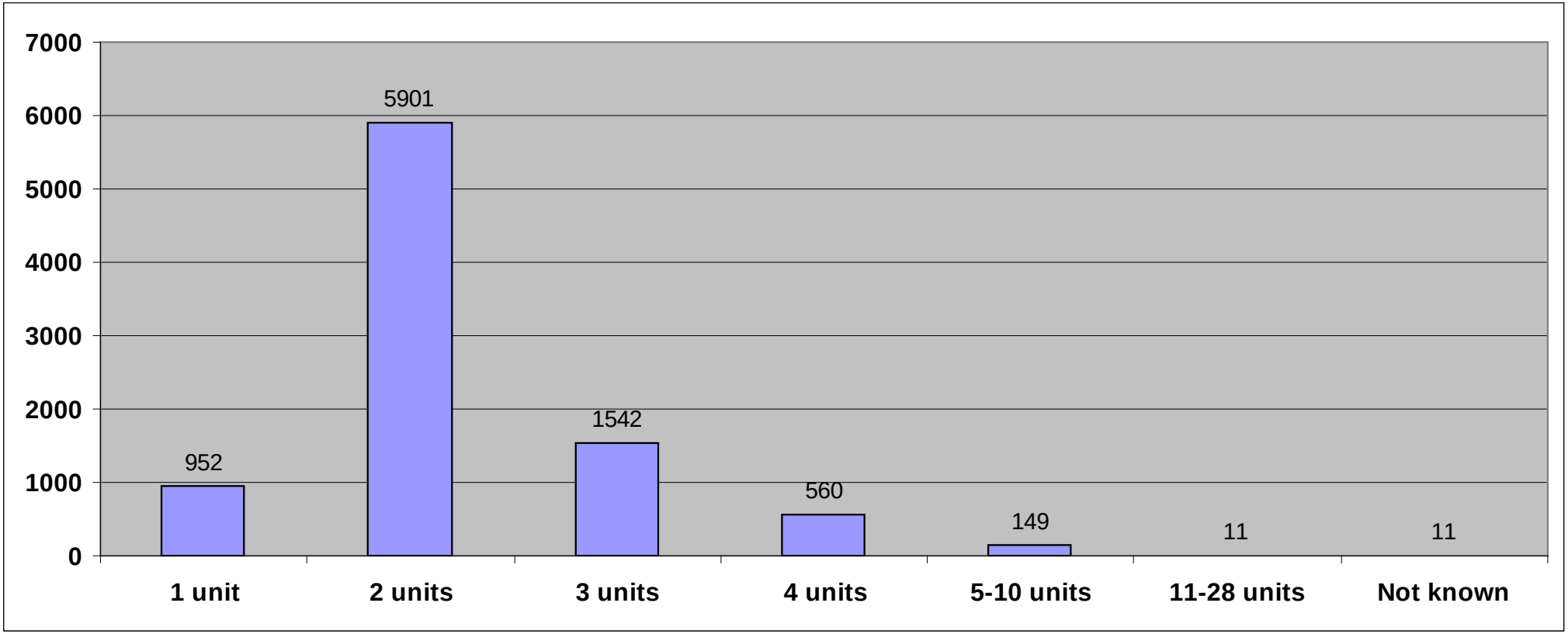
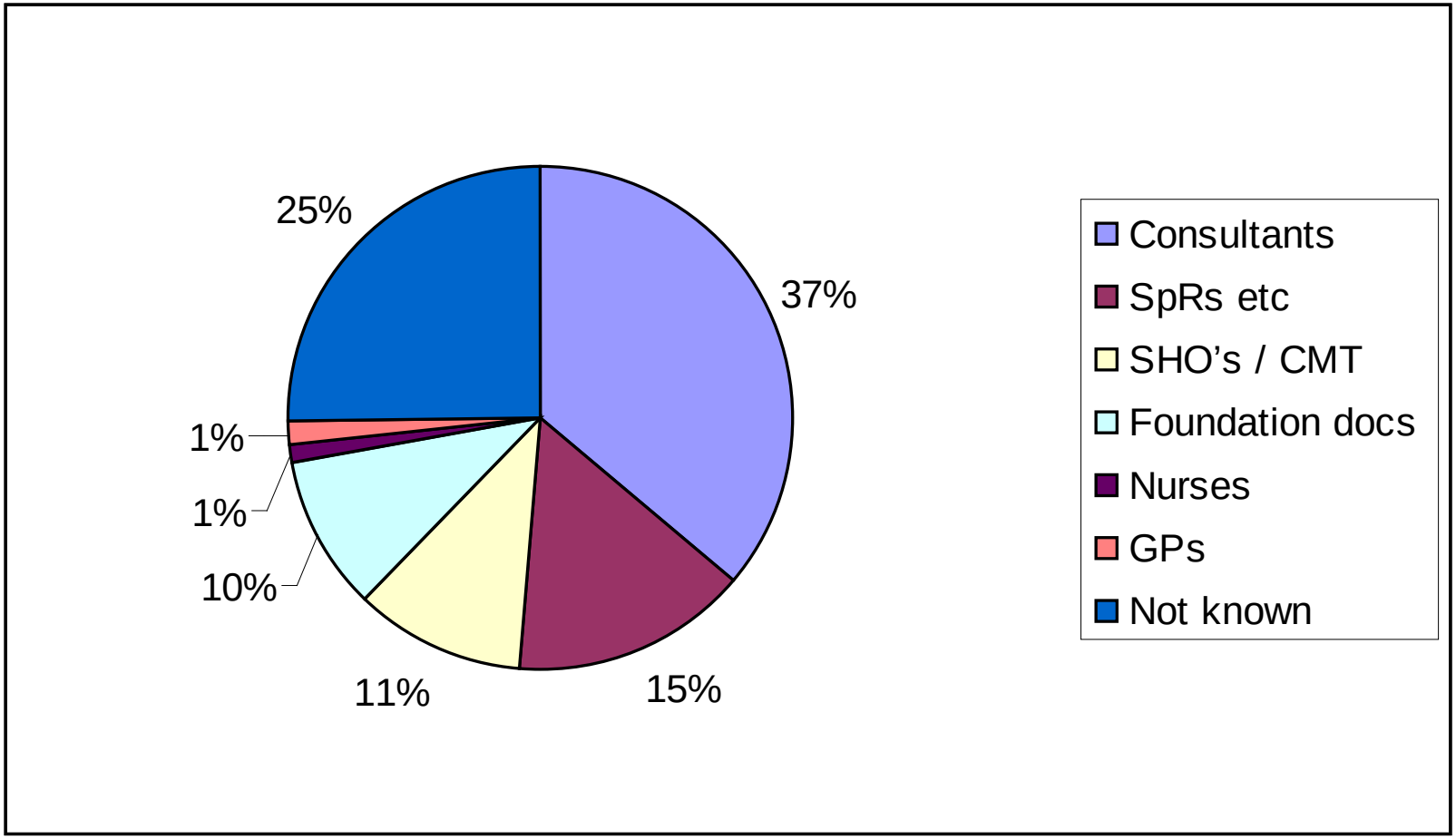
Number of Units Transfused



Who made the decision to transfuse?



Possible cases of potentially reversible anaemia

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Cause of anaemia	Number of cases n=9126 (%)
Possible iron deficiency	1201 (13%)
Possible B12 / folate deficiency	232 (2.5%)
Possible autoimmune haemolytic anaemia	137 (1.5%)
Possible renal anaemia	293 (3.2%)
Total possible cases of reversible anaemia	1791 (20%)

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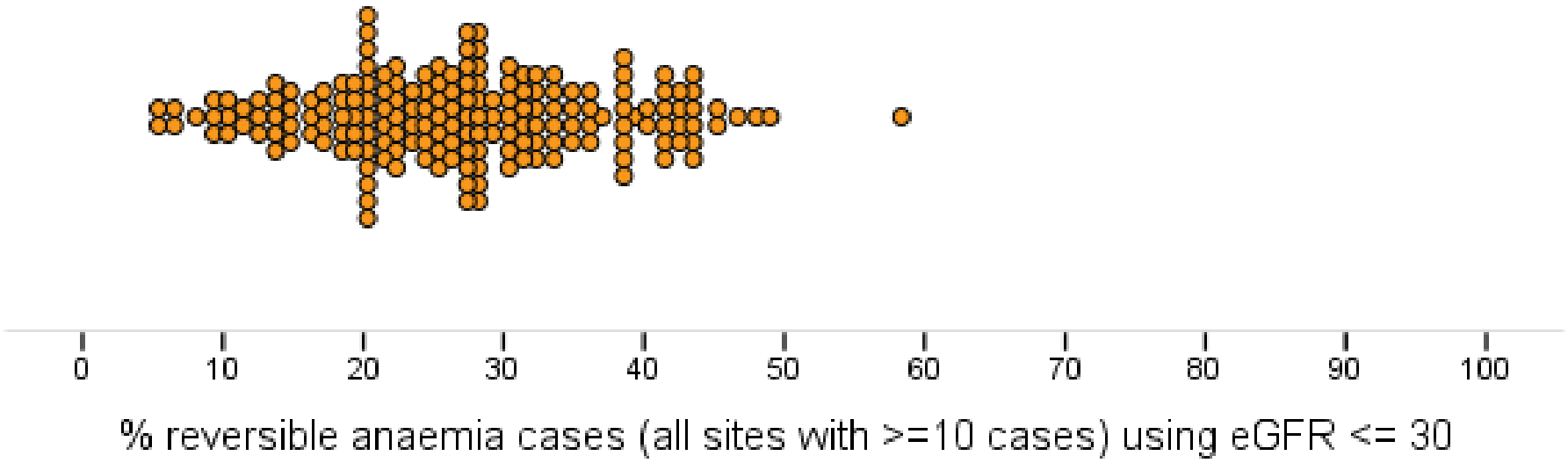
% Possible reversible anaemia cases: Site variation (of sites with 10 or more cases):



Patients with anaemia transfused above and below Hb threshold

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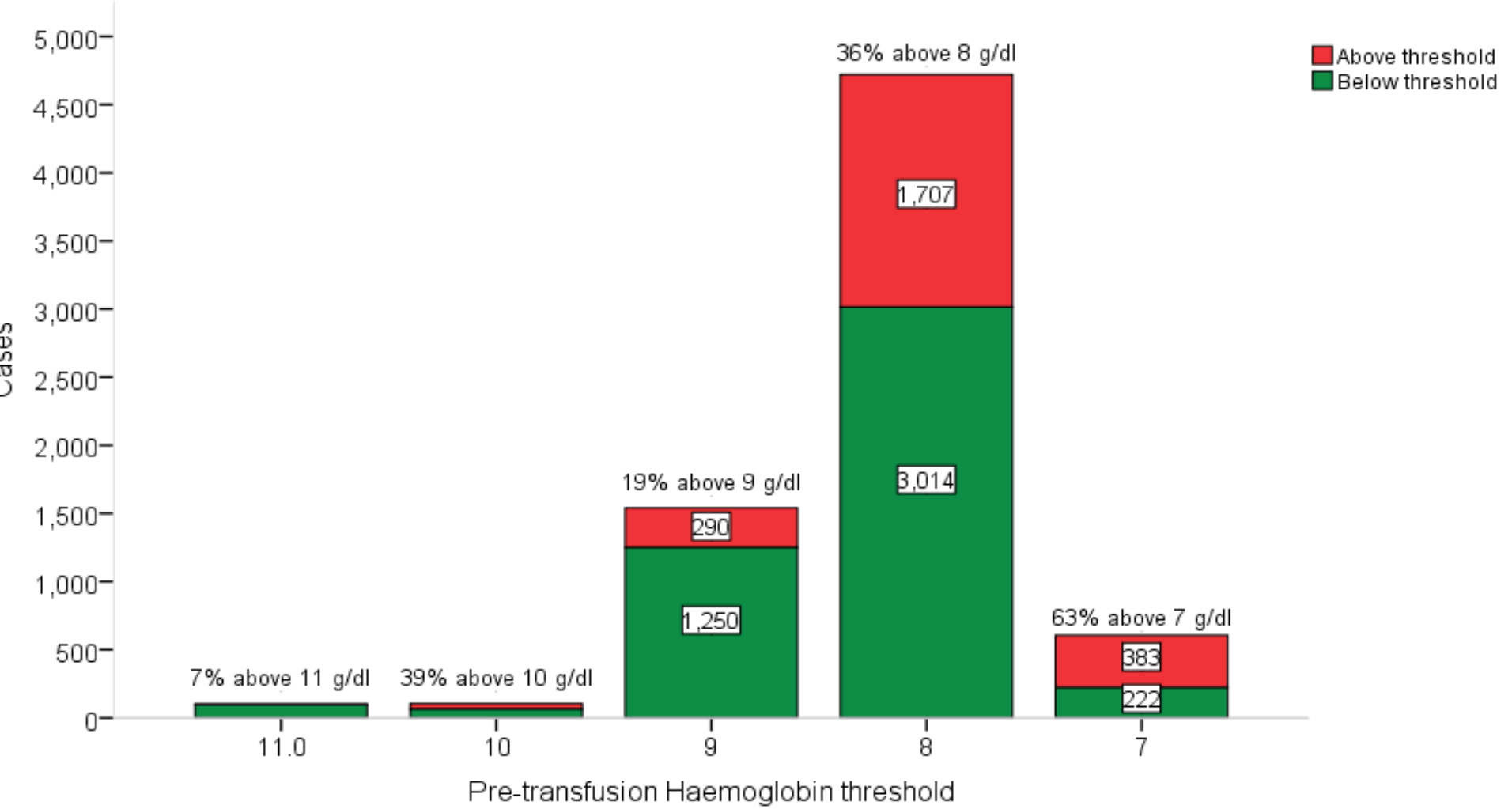

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Total number of cases of transfusion above Hb threshold set

Patients with anaemia	2449/7071 (35%)
Patients with blood loss	106/1749 (6%)

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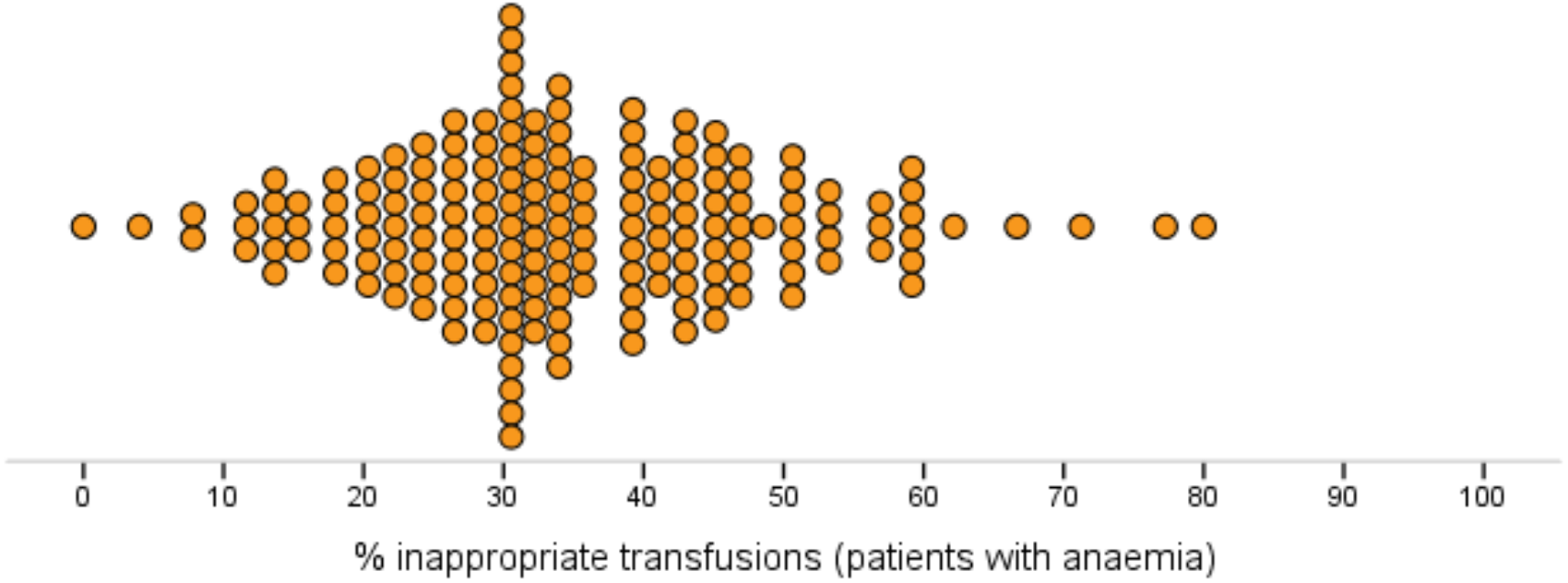
Transfusion above Hb threshold set: Site variation (of sites with 10 or more patients with anaemia)



Over transfusion (% transfused to more than 2g/dl above Hb threshold set for patient category)

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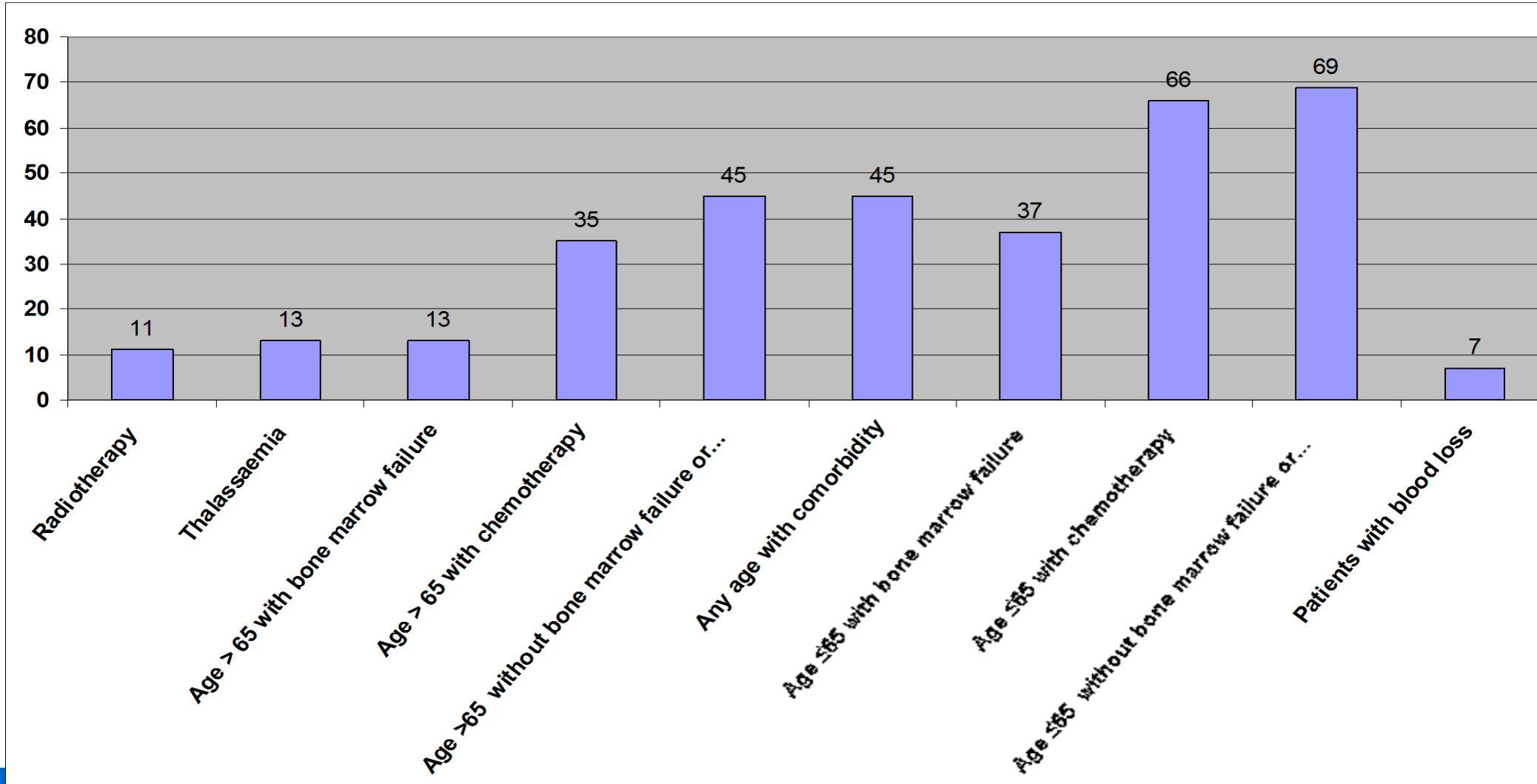

Conclusions

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The audit suggests that there is excessive transfusion of red cells to patients under the care of physicians in the UK because of:

- **Transfusion in cases with possible reversible anaemia (20%)**
- **Transfusion above the Hb threshold defined by the audit algorithm (29%)**
- **Overtransfusion – ie transfused to more than 2g/dl above the Hb threshold set for each case by the audit algorithm (33%)**

Overall, 48% of cases fell outside the algorithm set by the audit group in Part 1

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Conclusions

- Reasons are multifactorial and require further investigation in Part 2 of the audit which commenced in April 2012

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Preliminary results from Part 2

- 4818 cases were eligible for further analysis and of these we requested further information from the case notes in 2000
- So far we have data on 1436 cases
  - **670 cases of possible reversible anaemia**
  - **727 cases transfused above trigger Hb set**
  - **402 cases 'overtransfused'**

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Preliminary results from Part 2

- Of the 670 cases of reversible anaemia, 70% had a documented reason for transfusion
- The local consultant reviewers felt that 25% of transfusions could have been avoided
  - Anaemia not identified
  - Anaemia identified but not investigated
  - Anaemia identified and investigated but not treated

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Preliminary results from Part 2

- Of the 727 cases transfused above threshold, 54% had a documented reason for transfusion
- The local consultant reviewers felt that 33% of transfusions could have been avoided

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Preliminary results from Part 2

- Over transfused patients
  - There was a correlation between body weight and increase in Hb ($P < 0.001$) suggesting that the number of units transfused should be tailored to body weight rather than always prescribing ‘2 units’

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Extrapolating the figures from Part 2....

- 15% of medical patients received inappropriate transfusions:
  - 5% in patients with reversible anaemia and 10% in patients transfused above appropriate threshold
- There was a significant level of overtransfusion

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Discussion

- Why are patients with potentially reversible anaemia being transfused?
  - Significant symptoms / signs of anaemia
  - Inadequate recognition, investigation and treatment of anaemia
  - Pressure for early discharge?

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Discussion

- Why are patients being transfused above the thresholds set in the audit?
  - Symptoms and signs of anaemia at higher Hb levels
  - Physicians may not have caught up with surgeons and intensivists with regards to awareness of the lack of benefit of liberal transfusion practice vs. restrictive transfusion practice

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Discussion

- The pre transfusion Hb value alone is an imperfect indicator of appropriate transfusion
- Clinical judgement is required and a knowledge of potential alternatives to transfusion

Next steps

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- Results of the audit will be used to raise awareness of the recommendations for transfusion management of patients under the care of physicians
- Tools will be developed to support the recognition, investigation and management of anaemia plus simple guidelines to support transfusion decision-making

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Acknowledgments

- The clinicians in UK hospitals who are participating in the audit
- The Royal College of Physicians