National Audit of Red Cell Transfusion in Medical Patients

Consultant in Geriatric Medicine

Chairman University Hospitals Leicester Hospital Blood Transfusion Committee

Medical use of red cells

Red cell use has reduced by 20% in 10 years

Year	2000	2004	2008
Medical patients	52%	62%	64%
Surgical patients	41%	33%	29%

Is there a problem?

- Local audits
- UK comparative audit of upper GI bleeding and use of blood
  - 5% seemed unjustified
- NI National Audit
  - 19% outside guidelines
  - 29% using more than necessary

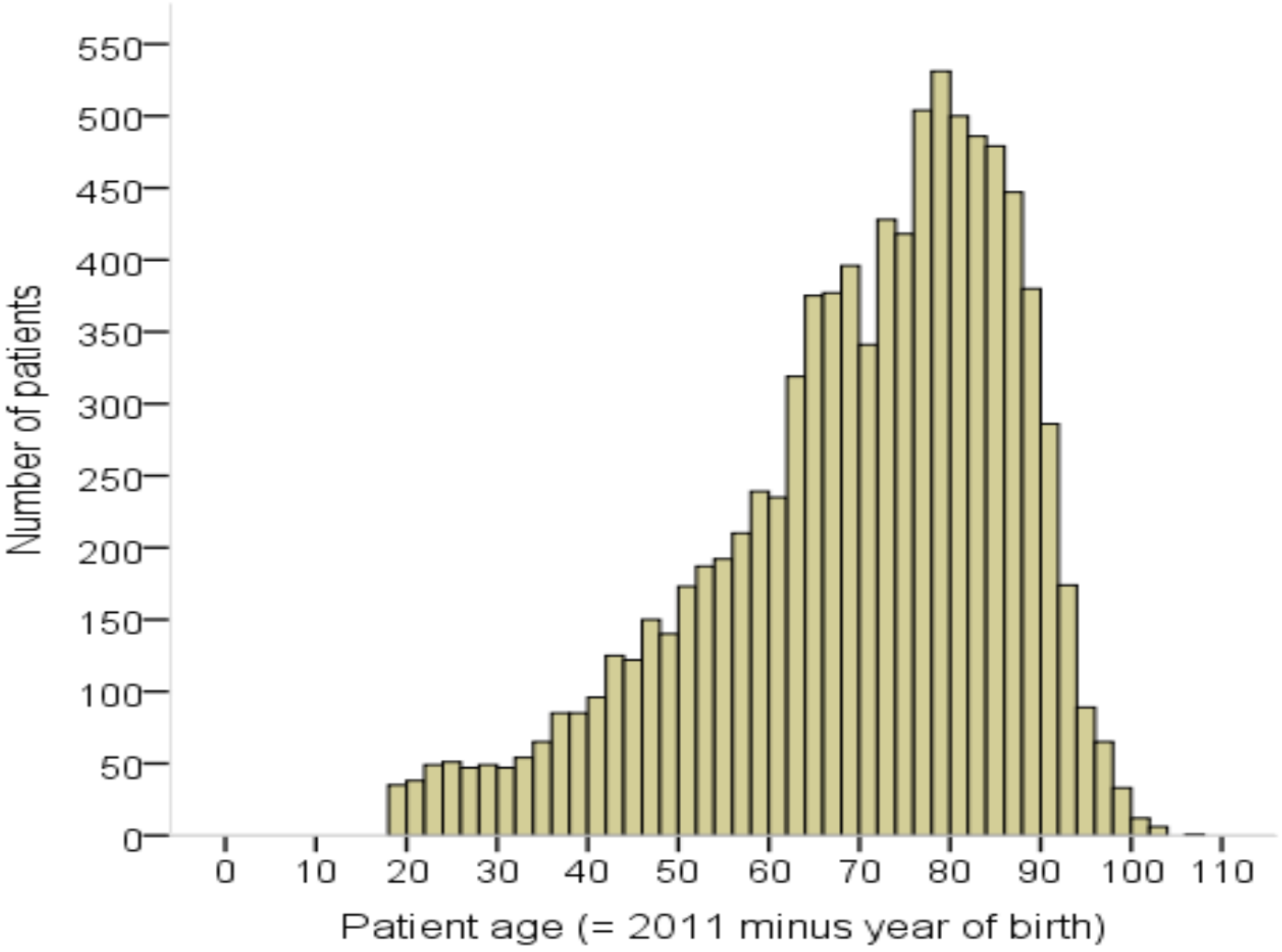
Where is the evidence?

- Evidence in ITU patients that conservative transfusion policies lead to better outcome
- Some evidence in GI bleeding that transfusion above Hb 10 g/dl has a worse outcome
- Evidence for increased infection risk and no better outcome in patients treated with a ‘generous’ transfusion strategy after hip fracture
- Some evidence for more generous transfusion strategies in radiotherapy patients

Results- participation

- 135/ 156 UK NHS trusts (182 sites)
- 15 independent hospitals
- Asked to audit all patients in a 1 week period
- No more than 1 in 3 haematology patients
- 9126 patients
  - 53% (4791) male
  - 47 % (4325) were female (unknown for 10)
  - Median age 73 years, IQR 60-82 years, range 18-111 year

Results: age distribution



Reason for transfusion

	%	n
Anaemia	78	7128
Blood loss	19	1773
Prior to procedure	2	189
Unknown	0.4	36

Underlying condition

	%	number
Anaemia Under investigation	20	1848
Gastro-intestinal	21	1954
Haematological anaemia	10	946
Bone marrow failure	22	2039
Renal failure	10	875
Oncology	19	1719
Other bleeding	8	755

Standards

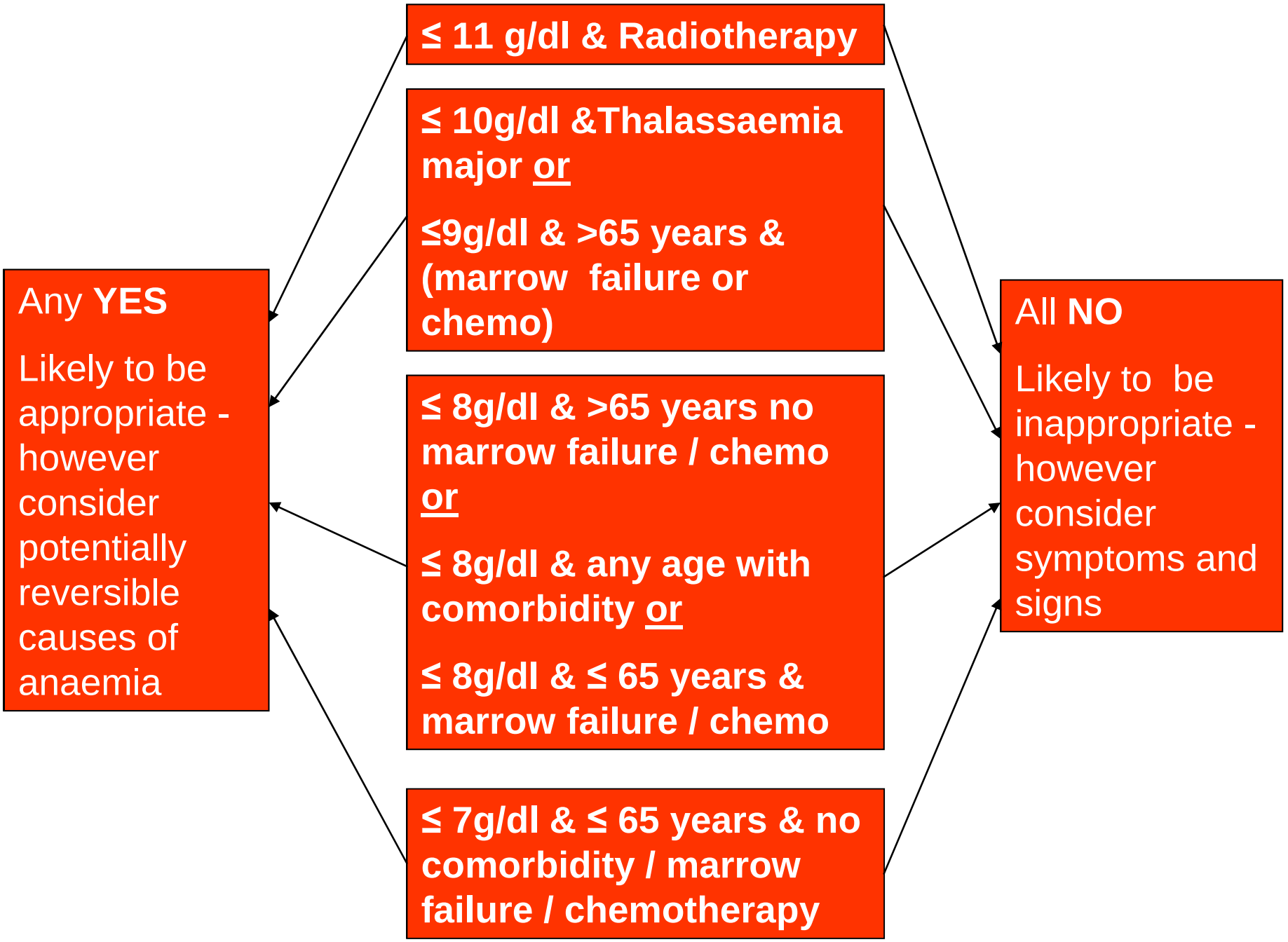
- Pre-transfusion Haemoglobin taken in 100% of cases within 3 days of transfusion
- No non-radiotherapy patients should have a pre-transfusion Hb > 10 g/dl
- Post transfusion Hb is taken in 100% of cases within 3 days
- No non-radiotherapy patient should have a post transfusion Hb > 12 g/d

Results

- Standard 1
  - Pre-transfusion Haemoglobin taken in 100% of cases within 3 days of transfusion
    - 93%  (51% same day)
- Standard 2
  - No non-radiotherapy patients should have a pre-transfusion Hb > 10 g/dl
    - 3.6% 

Results

- Standard 3
  - Post transfusion Hb is taken in 100% of cases within 3 days
    - 84%  (12% same day)
- Standard 4
  - No non-radiotherapy patient should have a post transfusion Hb > 12 g/dl
    - 5.9% 


≤ 11 g/dl & Radiotherapy
≤ 10g/dl &Thalassaemia major or
≤9g/dl & >65 years & (marrow failure or chemo)
≤ 8g/dl & >65 years no marrow failure / chemo or
≤ 8g/dl & any age with comorbidity or
≤ 8g/dl & ≤ 65 years & marrow failure / chemo
≤ 7g/dl & ≤ 65 years & no comorbidity / marrow failure / chemotherapy
Any YES
Likely to be appropriate - however consider potentially reversible causes of anaemia
All NO
Likely to be inappropriate - however consider symptoms and signs

Could this anaemia be treatable without transfusion?

- Iron deficiency
  - Ferritin ≤15 mcg/l (f) or ≤ 20 mcg/l (m)
    - ***or if no Ferritin result then*** Iron studies suggestive of TSAT ≤20 ***or if no TSAT then*** TIBC ≥ 85 micromol/l ***or if no TIBC then*** MCV ≤ 78fl
- B12 < 150 ng/l
- Folate deficiency
  - Serum folate ≤ 2mcg/l (ng/ml)
    - ***or if no serum Folate then*** Red cell folate ≤ 80 mcg/l (ng/ml)

Could this anaemia be treatable without transfusion?

- **Autoimmune haemolytic anaemia**
  - Direct Antiglobulin ‘Positive’ or grade 1 and above
- **Renal Anaemia (definition 1)** calculated eGFR of ≤ 44 but excluding patients with ‘acute renal failure’, ‘blood loss’ and unknown age or gender.
- **Renal Anaemia (definition 2)** calculated eGFR of ≤30 and chronic renal failure as ONLY diagnosis ‘ticked’

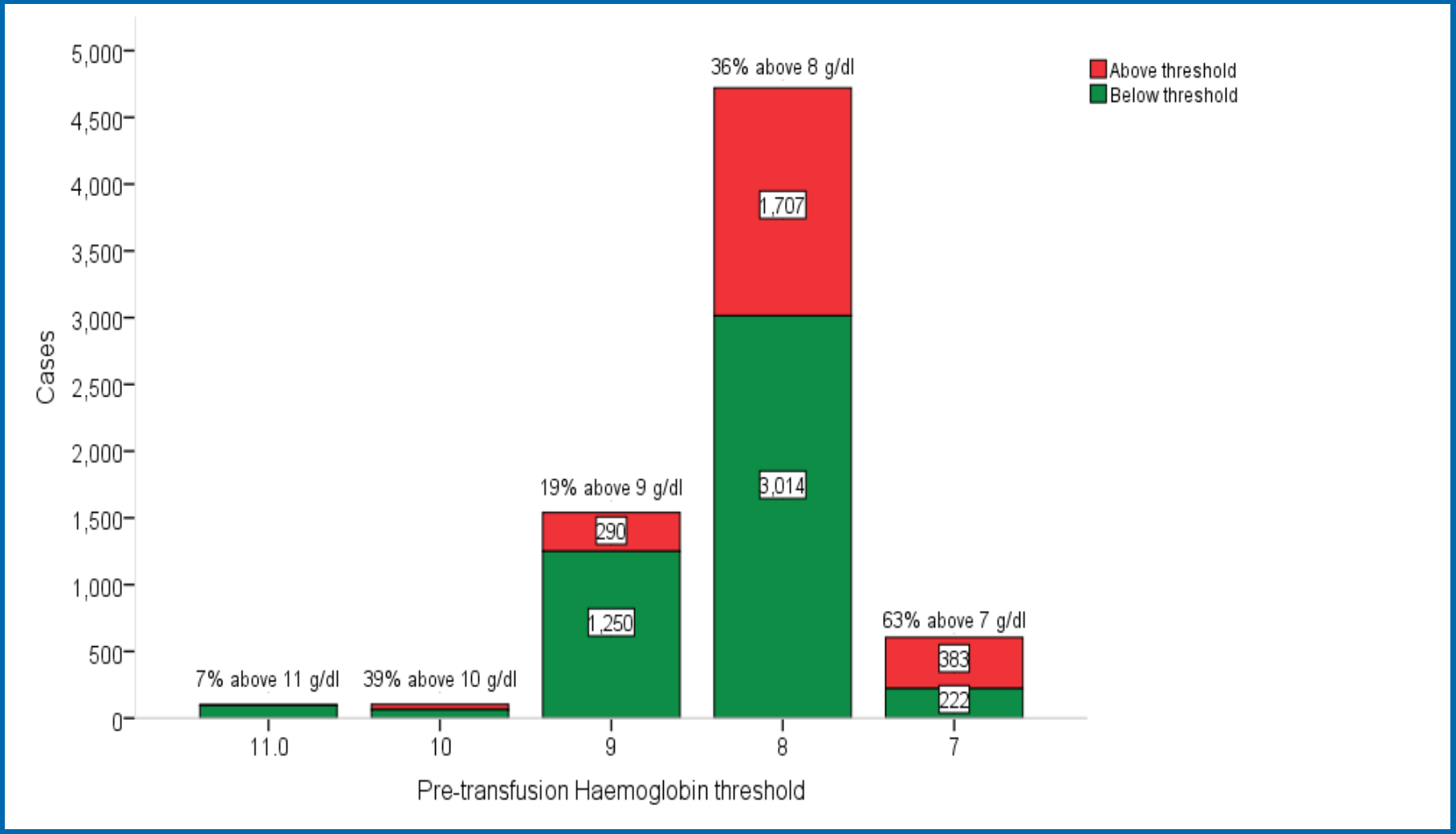
Standards- reversible anaemia

- **Renal Anaemia (definition 1)** calculated eGFR of ≤ 44 but excluding patients with ‘acute renal failure’, ‘blood loss’ and unknown age or gender.
- **Renal Anaemia (definition 2)** calculated eGFR of ≤30 and chronic renal failure as ONLY diagnosis ‘ticked’

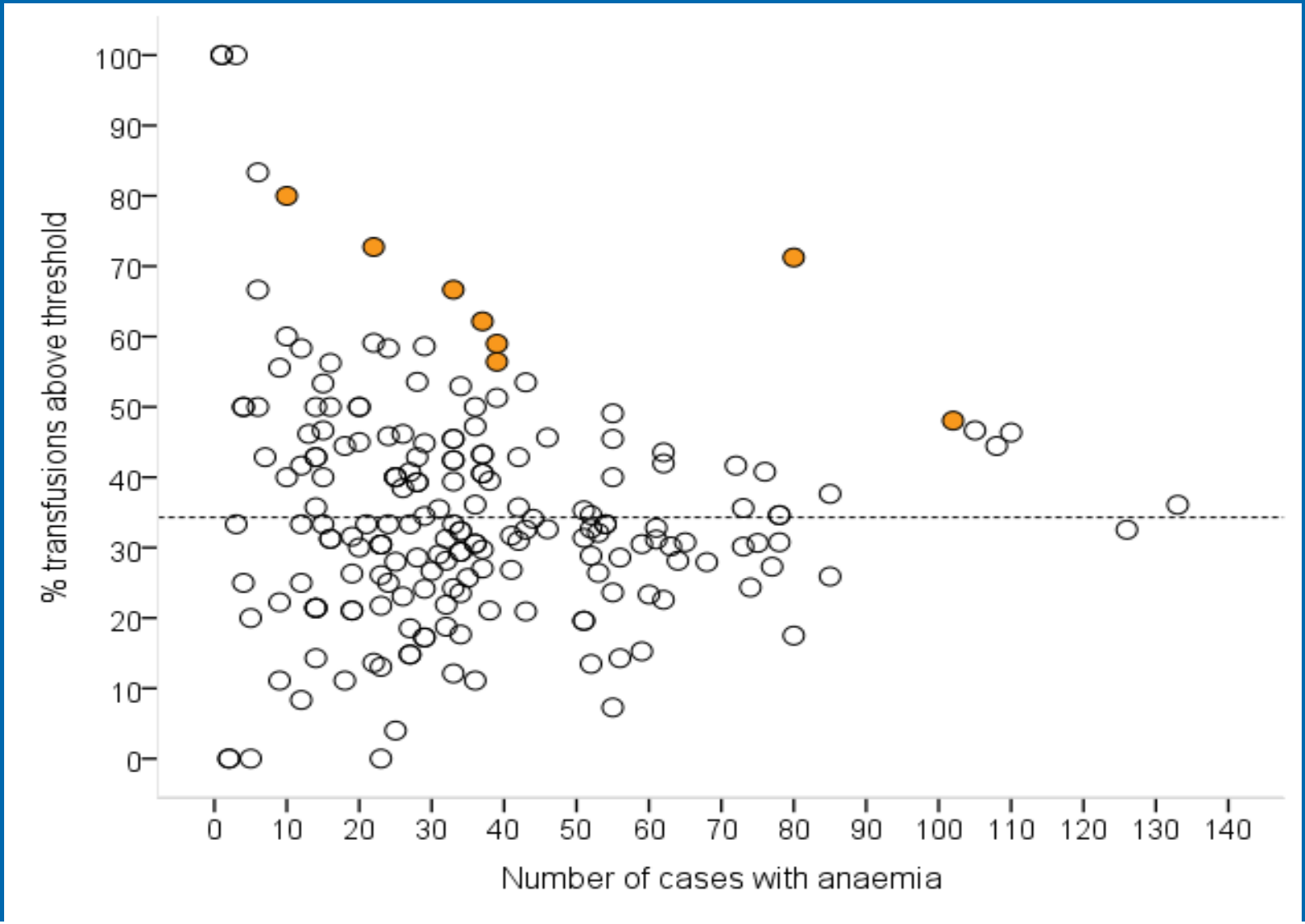
Possible reversible anaemia

Possible reversible cause	*n tested*	*abnormal (%)*
Iron deficiency	9019	1201 (13%)
B12 or Folate deficiency	3193	232 (7.3%)
Autoimmune haemolytic	437	137 (31%)
Renal failure (definition 2)	6847	293 (4.3%)
Total possible reversible	9126	1791 (20%)

29% of patients were given transfusions despite being above their Hb threshold



Possible inappropriate transfusion-variability between sites



Summary

- 20% of patients may have had a cause of anaemia potentially treatable without transfusion
- 29% of patients were transfused despite being above the trigger Hb level
- 33% of patients were transfused to Hb increment greater than 2g/dl
- 53% of patients fitted into at least one of the above categories

Summary

- Hb level alone is not the only factor
- There is some evidence of over transfusion
- There is variability in practice
- Part 2 of the audit will give a clearer picture of how many transfusions are avoidable
- The evidence base is limited- we need to improve knowledge and practice

Acknowledgements

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