Use of Blood in Medical Patients 2011 Audit Part 1

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National Comparative Audit of Blood Transfusion

Why audit the use of red cells in medical patients?



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%

Series of surveys undertaken in North East England and personal communication JP Wallis

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 Pre transfusion Hb



 \leq 7g/dl & \leq 65 years & no comorbidity & no bone marrow failure & no chemotherapy

Definition of possible potentially reversible anaemia

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

B12 deficiency = $B12 \le 150 \text{ ng/l (pg/ml)}$

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 Antigloblin Test 'Positive' or grade 1 and above

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

Transfusion above pre-Tx Hb threshold

Patients with bleeding and Hb >10 g/dl Patients with radiotherapy and Hb >11 g/dl Patients with thalassaemia and Hb >10 g/dl Patients with bone marrow failure or with chemotherapy and >65 years old and Hb >9 g/dl Patients with bone marrow failure or with chemotherapy and ≤65 years old and Hb >8 g/dl Patients >65 years old and Hb >8 g/dl

Patients with comorbidity (at any age) and Hb >8 g/dl

Patients \leq 65 years with no comorbidity, no bone marrow failure and no chemotherapy, and Hb > 7g/dl

Defining bone marrow failure: Haematological diagnosis such as leukaemia, myeloma,

lymphoma , myelodysplasia, aplastic anaemia

Over transfusion

Transfusion to more than 2g/dl above threshold pre-Tx Hb for possible reversible anaemias

Transfusion to more than 2g/dl above the Hb threshold set for that patient

Demographics



Clinical Reason for Red Cell Use



Reason for Transfusion



Pre and post transfusion Hb values



Number of Units Transfused



Who made the decision to transfuse?



Defining possible cases of iron deficiency

Parameter	Men	Women
Total number	4791	4335
With ferritin result (%)	1774 (37%)	1725 (40%)
With ferritin \leq 20 mcg/l (male) or \leq 15 mcg/l (female)	248	341
With transferrin saturation \leq 20 in cases without ferritin results	58	78
With MCV \leq 78 fl in cases without ferritin or iron studies	210	264
Total possible iron deficiency	516	683

Defining possible cases of B12 / folate deficiency

Parameter	
Total number	9126
With B12 result	3127
	(34%)
With B12 \leq 150 ng/l (pg/ml)	111
With serum folate	
	(30%)
With serum folate $\leq 2mcg/l$ (ng/ml)	
With red cell folate (and no serum folate)	
Red cell folate \leq 80 mcg/l (ng/ml)	
Total B12/folate deficiency	

Possible autoimmune haemolytic anaemia (AIHA)

Parameter	
Total number	9126
With DAT result	437
	(5%)
With DAT Positive or grade 1 and above	137
Total possible AIHA	

Possible renal anaemia

Parameter	
Total number	
Number of patients after patients with 'acute renal failure'	
and 'bleeding' removed	
With creatinine result available	
With eGFR ≤ 30	
With eGFR \leq 30 and chronic renal failure ticked and no	
other diagnosis ticked	

% Possible reversible anaemia cases: Site variation (of sites

with 10 or more cases):



Patients with anaemia transfused above and below Hb threshold



Total number of cases of transfusion above Hb threshold set

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

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)



Conclusions

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

Conclusions

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

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

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

Discussion

- The pre transfusion Hb value alone is an imperfect indicator of appropriate transfusion
- Clinical judgement is required
- It would be great to have a bedside test that could aid the decision making process

Next steps

- 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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