A focused evaluation of the incidence and current management of pre-operative anaemia in a teaching hospital

Chuni C, Gwinnutt M, Stott M

Background

The World Health Organisation (WHO) defines anaemia in females of having Hb concentration of <120 g/L and <130 g/L in males.

Preoperative anaemia:

- ◆ Increase 30 day mortality.
- ◆ Higher postoperative complications.
- ◆ Longer hospital stay.
- ◆ May require a RBC transfusion during surgery, which has a 30 day morbidity risk.
- ◆ 1-2 units RBC exposes the patient to TRALI, infection, myocardial/neurological events, kidney injury and immunosuppression.

Potential Benefits of iron

- ◆ Reduced length of hospital stay.
- ◆ Fewer re-admissions.
- ◆ Ability to continue treatment in the community.
- ◆ Cost-effective to give (Ferinject) IV iron pricing £80 than RBC unit pricing £350.
- ◆ 20 minute IV iron transfusion increases stores and haemoglobin within 10-14 days.

Negatives

- ◆ Lengthy process- takes 2 months to correct anaemia and up to 6 months to replenish stores.
- ◆ Iron tablet poorly tolerated due to GI side effects.
- ◆ Poor absorption of iron tablets.

Aim

Quantify the number of patients presenting for surgery with pre-existing anaemia. In order to introduce a pre-operative anaemia management service for all specialties.

Method

Results

Specialty	Anaemic patients		
	only	MCV <80	MCV >100
Colorectal	4	0	0
Gen surg	7	2	1
ENT	7	1	1
HPB	7	1	2
MFU	4	1	0
Ortho	5	2	0
Urology	13	3	0
UGI	2	1	0
Gastro	2	0	0
Unknown	3	1	1

Table 1 The proportion of patients with anaemia, including specialties with an MCV <80 or >100 g/L.

Figure 1 The proportion of anaemic patients within the different specialities.

Figure 2 Bar chart showing the number of surgical patients with anaemia.

Pre-op assessment to surgery duration	Pre-op assessment to	
	Mean (days)	Median (days)
Normal Hb	10	7
Anaemia	12	7

Table 2 The mean and median time taken for patients to attend pre-operative assessment to surgery.

Conclusion

- ◆ Pre-operative anaemia is a significant problem in the surgical patient population.
- ◆ A formal pre-operative anaemia management service, including assessment of haematinic and a iron replacement regimen is required.
- ◆ Time from pre-op assessment to surgery should be extended from 7 days to around 28-42 days.

Reference

1. Musallam KM, Tamim HM, Richard T, Spahn DR, Rosendaal FR, Habbal A, et al. Pre-operative anaemia and post operative outcomes in non cardiac surgery: a retrospective cohort study. Lancet. 2011; 378(9800):1396-407
2. 11. Jans O, Jorgensen C, Kehlet H, Johansson PI, Lundbeck Foundation Centre for fast track hip and knee replacement Collaborative Group Role of pre-operative anaemia for risk of transfusion and postoperative morbidity in fast track hip and knee arthroplasty. Transfusion 2014;54 (3): 717-26
3. Hopewell S, Omar O, Hyde C, Yu LM, Doree C Murphy MF A systematic review of the effect of red blood cell transfusion on mortality: evidence from large scale observational studies published between 2006 and 2010 BMJ open. 2013; 3 (5)
4. Paone G, Likosky DS, Brewer R, Theurer PF, Bell GF, Cogan CM et al. Membership of the Michigan society or thoracic and cardiovascular surgeons: Transfusion 1 and 2 units of red blood cells is associated with increased morbidity and mortality. Ann Thoracic Surg. 2014; 97 (1): 87-93
5. Cook JD. Diagnosis and management of iron- deficiency anaemia. Best practice Res Clinical Haematology. 2005; 18 (2) : 319-3
6. Rogoni C et al. Efficacy and safety of ferric carboxymaltose and other formulations in iron deficient patients: A systematic review and network meta-analysis of randomized control trials. Clinical Drug Investigations. 2016: 36:177-194
7. B.Clevenger and T.Richards. Pre-operative anaemia. Anaesthesia. 2015; 70 (suppl. 1): 20-28
8. L.T.Goodnough, A. Maniatis, P. Earnshaw, G Benoni, P. Beris, E. Bisbe et al. Detection, evaluation and management of pre-operative anaemia in the elective orthopaedic surgical patient. NATA guidelines. British Journal of Anaesthesia. 2011; 106 (1): 13-22