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Misconceptions and dilemmas in optimizing pre-operative haemoglobin

Pre-operative anaemia has been identified as an independent risk factor for 30 day morbidity and mortality following non cardiac surgery.[1]Unwise prophylactic allogenic blood transfusions (ABT) would only worsen outcomes. In view of these findings pre-operative anaemia would be a contraindication for elective surgery.

The British Journal of Anaesthesia in its July 2015 issue carries a challenging review article Titled "Fit to fly": overcoming barriers to pre-operative haemoglobin optimization in surgical patients.[2] It advocates multi-disciplinary, multi-modal, individualised strategies for Patient Blood Management (PBM) and identifies 10 common misconceptions in the diagnosis and management of preoperative anaemia. We need to consider how best we could adopt and adapt these challenging new insights in the context of Sri Lankan practice to ensure better outcomes for our surgical patients.

Misconception 1. Prevalence of anaemia in surgical patients is similar to that in the general population.

The World Health Organization (WHO) defines anaemia as <12g/dl in females and <13g/dl in males. Considering these values most of our patients would be anaemic. Furthermore there are no identified norms of haemoglobin values for the Sri Lankan population. Department of Census and Statistics, Ministry of Health, Sri Lanka, Demographic and Health Survey report of 2006/2007[3] in its section on prevalence of anaemia in women of the 15-49 age group identifies 39% as having a Hb≥12g/dl; 34% a Hb of 10-11.9g/dl (mild anaemia); 5% a Hb 7-9.9g/dl (moderate anaemia) and 0.3% a Hb<7g/dl (severe anaemia). National Food Security survey 2009 revealed that 22% of non-pregnant and 16% of pregnant females between 15-49 years were anaemic. Multiple micronutrient survey carried out by the Medical Research Institute revealed that the prevalence of anaemia among children aged 6-59 months was 15.1%. 15% of pre-schoolers and 20% of school children were also found to be anaemic.

Misconception 2. WHO definitions of anaemia are always valid for patients undergoing major surgery.

The WHO definition may not be reliable for the surgical population. We need a more practical end-point as the sub optimal Hb value for the surgical patient to minimize adverse outcomes and risk of ABT. The BJA article recommends a desirable target of 13g/dl irrespective of gender. This may be ideal, but is it practical or even possible to implement in our patients? If this ideal is recommended universally it would be an insurmountable dilemma for anaesthetists in south asia. We need to scientifically identify an achievable target for patients awaiting elective surgery in our country.

Misconception 3. Preoperative anaemia maybe cured by the proposed surgery.

Even if the most important cause for the anaemia is surgically removed, it is very unlikely that it would be sufficient to prevent further reduction in haemoglobin value in the immediate post-operative period. Our role therefore is to fully investigate all the possible causes for anaemia and individualise its treatment.

Misconception 4. Preoperative anaemia poses no risk to the patient and scheduled surgery should not be delayed.

Our current practice is to accept the WHO recommended lowest acceptable haemoglobin levels for surgery (7g/dl for otherwise healthy individuals and 10g/dl for cardiac compromised patients). NICE guideline on blood transfusion (NG 24) November 2015, recommends a restrictive strategy of red cell transfusion. Transfusion trigger is 7g/dl with a target of 7-9g/dl.

Most anaesthetists usually make a rough clinical assessment based on their own practice as to whether pre-operative haemoglobin levels are acceptable with regard to the expected blood loss.

If these values were not achieved prior to surgery, when iron deficiency anaemia is diagnosed the common practice is ABT for a quick response or postponing the surgery for long term oral iron therapy, both of which create dilemmas in today's context.

Misconception 5. Management of preoperative anaemia is not cost effective.

Recent guidelines recommend that a Full Blood Count, Iron status and an inflammatory marker should be tested prior to elective surgery at least 4 weeks ahead.[4] Is it time for us to do the same? Is this cost-effective? If not is it a dilemma?

Misconception 6. The commonest cause for preoperative anaemia is iron deficiency and high dose oral supplementation is efficient to treat it.
Fe deficiency anaemia is the commonest cause of anaemia in the Sri Lankan surgical population as well. Is oral iron therapy going to be efficient in them? This would be true if a minimum 4-6 week period is available before surgery, which necessitates assessment at pre-operative clinics. Dilemmas may occur as there are many contraindications to oral iron therapy which is also often not well tolerated. High doses can be given only if there is no active bleeding or any inflammatory condition.

Misconception 7. IV iron is hazardous.

High molecular weight iron dextran was the formulation used earlier and there have been reports of anaphylaxis and even deaths. This is therefore no longer in use in Sri Lanka today. New formulations are available in Europe such as low molecular weight iron dextran, iron sucrose, iron maltoside and ferric carboxymaltose. These give a rapid and complete response and have a very low incidence of adverse events.

Misconception 8.Use of newer IV formulations is very expensive and not cost effective.

The newer i.v. Fe preparations have been shown to be safe, cost effective, and more efficient and help reduce hospital visits for the patient. The hospital pharmacies in Sri Lanka have iron sucrose preparations. It is timely that we effectively used the new IV formulations for our patients. Iron sucrose has very few reported adverse effects.

Misconception 9. Preoperative erythropoietin increases thrombotic risk and should not be used.

The dilemma regarding the use of erythropoietin is its high cost. Thus its use has been limited to the renal disease group in our country. It is advised that rHuEPO therapy should be prescribed within the approved indications, an individually tailored dose should be given and adjuvant i.v. iron and deep venous thrombosis prophylaxis should be administered.

Misconception 10. Should other transfusion alternatives be implemented, preoperative anaemia management is not a priority.

Use of blood saving strategies does not mean that treating preoperative anaemia is not needed. This is where the PBM concept initiated by a consortium of 4 German Teaching Hospitals to target and implement treatment of pre-operative anaemia becomes important.

They identified the key success factors. They are a) a dedicated interdisciplinary steering committee, b) support from hospital management, c) commitment from surgical and medical disciplines, d) knowledge of patient blood management background such as anaemia,

transfusion and alternatives to transfusion, and e) knowledge of clinical and pre-clinical management about surgical procedures associated with preoperative anaemia and considerable blood loss and the structure and processes of pre-clinical evaluation to be reorganized and optimized.

Transfusion specialists in Sri Lanka are aware of these changes and are in the process of implementation of this concept. Our primary role is to treat preoperative anaemia effectively as low haemoglobin is a contraindication for elective surgery and failure to treat would be sub standard clinical practice. We do have a bigger role in spreading awareness, teaching and training, implementing guidelines as part of the PBM group.

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