

PRE-OPERATIVE ANAEMIA MANAGEMENT WITH INTRAVENOUS IRON
A SYSTEMATIC REVIEW

Submitted by

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ABSTRACT

BACKGROUND

Iron deficiency anaemia (IDA) is a common condition in patients presenting for surgery and is found in up to 75% of non-cardiac surgical patients. Pre-operative haemoglobin (Hb) is a strong predictor of transfusion requirement and it should, as part of a comprehensive blood conservation approach, be optimised whenever possible. Treatment options for iron deficiency anaemia include oral and intravenous iron or red blood cell transfusion. That both, anaemia and red blood cell (RBC) transfusion expose the patient to unnecessary risks is supported by an ever-increasing body of evidence. Consequently, allogeneic RBC transfusion should be avoided whenever possible and alternative treatment modalities which optimize the patient's own red cell mass should be exhausted. However, anxiety over the short and long term effects of intravenous iron have limited its more widespread use. Newer dextran-free compounds, however, provide a safer treatment option.

OBJECTIVE

The objective of this systematic review was to critically appraise, synthesise and present the best available evidence related to the effectiveness and economic aspects of intravenous iron administration on the correction of iron deficiency anaemia in the peri-operative period.

DATA SOURCES

A comprehensive search was undertaken on major electronic databases from 2001 to 2012. The search was conducted in English, German, Italian and Dutch.

REVIEW METHODS

Randomized controlled trials, quasi-randomized controlled trials and quasi-experimental studies were included in the review. Critical appraisal and data extraction were undertaken using the Joanna Briggs Institute critical appraisal instrument and the standard data extraction form for evidence of effectiveness. Anaemia correction was as defined by study authors

RESULTS

The quantitative component of the review identified two randomized controlled trials for inclusion. One study of 76 patients with menorrhagia evaluated the effectiveness of pre-operative intravenous (IV) iron compared with oral iron in anaemic patients scheduled for surgery – the nature of which was not reported, aiming for a 1 g/L haemoglobin increase preoperatively. The intravenous iron group had greater increases in the Hb level than the oral iron group (3.0 vs. 0.8 g/dl, respectively; $p < 0.0001$). One other study evaluated the effectiveness of pre-operative intravenous (IV) iron compared with placebo in patients with bowel cancer scheduled for resectional surgery, looking at haemoglobin changes between recruitment and day of admission. A small subgroup of these patients was anaemic but no difference was demonstrated in haemoglobin changes between the groups. One additional RCT was found examining the effectiveness of IV iron in cardiac surgical patients, but full text examination and appraisal revealed that the majority of patients enrolled in these studies were not anaemic.

The search for the economic component of the review revealed no randomized controlled trials examining the cost effectiveness of preoperative correction of iron deficiency anaemia with intravenous iron

CONCLUSIONS

Our review found insufficient data to make firm conclusions about the efficacy of pre-operative intravenous iron administration for the correction of anaemia based on clinical trial settings. Neither could we establish firm conclusions on the potential cost savings due to intravenous iron supplementation.

IMPLICATIONS FOR PRACTICE

There is inadequate RCT evidence at present to guide clinical practice.

IMPLICATIONS FOR RESEARCH

Our study found insufficient data to make firm conclusions about the efficacy, safety and cost effectiveness of pre-operative intravenous iron administration for the correction of anaemia pre-operatively. Adequately powered RCTs are required that evaluate and report the efficacy, safety and potential cost savings of intravenous iron administration as a treatment modality for iron deficiency anaemia.

KEYWORDS

Pre-operative anaemia, iron deficiency, intravenous iron, oral iron, blood transfusion, adverse effects, cost-benefit, cost effectiveness, cost-utility.