Identifying and treating iron deficiency anaemia prior to elective surgery

Dr Kerry Gunn1, Dr Chang Kim1, Dr Mahesh Harilal1, Dr Jenny McDougall2, Deirdre Doran3, Amanda Rae3, Lizzie Sithole3, Colleen McFetridge1, Aruna Makan1, Pauline Fakalata1, Karen Patching1, Debashish Biswas1

1 Auckland District Health Board, New Zealand

Introduction

The Auckland District Health Board has traditionally lacked systems in the hospital to pick up asymptomatic anaemia and as a consequence many patients have received a blood transfusion where iron loading interventions may have been more appropriate.

In mid-2013 the anaesthetic assessment service identified that pre-surgical testing and treating of iron deficiency for patients undergoing high blood loss surgery would have significant impacts on the need for red blood cell transfusions in the perioperative period. In addition it would also contribute to post operative recovery for the patient as well.

The project was launched under the existing Blood is a Gift – Blood Management programme that has been running within Auckland City Hospital and Greenlane Clinical Centre.

Aim

The objectives of this project were established as:

• early identification of patients with iron deficiency anaemia,
• timely referral for a pre-operative iron infusion,
• clear communication and a clear pathway for patients,
• and no substantial increase in current workload.

Methods

It was agreed by the clinical lead on the project that Orthopaedics would be the first service to be piloted. A Six Sigma DMAIC project plan was set up and aligned to the clinical method of planning, trial, analysis and correction, with a guiding coalition of clinical team members leading, championing and participating in the project. The team ran workshops from September through December 2013 in which they mapped out the patient journey, identified eligibility criteria, simplified an algorithm for referral for intravenous iron infusions, set up documentation, and clarified data requirements and roles and responsibilities.

Senior nurses from the Orthopaedic Clinic worked closely with the anaesthesia team and took the lead with their own staff by putting in place teaching sessions and teaching aids for the programme. Patient information handouts were also designed to ensure adequate information and reference was being provided to the patients.

A pilot was launched in Jan 2014 to test the new process starting with Orthopaedic patients who were to undergo hip, knee joint replacement or pelvic surgery resulting in an increased screening of patients for iron deficiency anaemia from 10% to 90%. The process was then replicated for gynaecology patients who were undergoing high blood loss procedures or were being kept in secondary services for further treatment and is being rolled out for urology and general surgery patients as well. In each of the services the proposed algorithm and pathway is being put into place through doing a process walkthrough, raising awareness with the appropriate staff, team involvement in the process design, teaching sessions & process aids, patient information aids and reinforcement and evaluation.

All high risk surgical patients (i.e. high risk of blood loss during surgery) will continue to be tested for their haemoglobin and iron levels whilst low risk patients will only be tested if there is a medical requirement or their specialist flags possible anaemia as a concern. A formalised process was also put in place for referral of any patient with high ferritins (i.e. above 600) who had not been previously identified within the system.

Results

The results for the patients who have undergone iron infusions have shown:

• a statistically significant increase in Hb levels within 2-4 weeks post infusion,
• and mean Hb across all groups has increased from 109 g/L pre infusion to 122 g/L post infusion.

Patient experience feedback through phone surveys has highlighted:

• that 47% of the patients felt a reduction in overall tiredness,
• whilst another 35% felt it aided them to recover faster post-surgery,
• 91% have responded with a very high level of satisfaction with the new process,
• and 87% have indicated that they are willing to undertake another infusion should the need arise.

Next Steps

Over 2015, as next steps the following are being undertaken:

• Establishment of an iron infusion clinic to manage the increasing volume of infusion requests
• Further data analysis on impact of iron infusions on blood transfusions during and within 48-72 hours post surgery
• Completion of patient experience feedback
• Formal roll out to all remaining surgical services

Conclusion

The project has highlighted that capturing iron deficiency anaemia prior to elective high blood loss surgical procedures has an impact on patient health outcomes post surgery and their wellbeing. It also emphasised the importance of having a well represented and engaged project team in delivering project outcomes including design and implementation of the pathways.