

# The Prevalence of Iron Deficiency Anaemia, and Association with Peri-Operative Transfusion Rates in Patients Undergoing Resections of Bone and Soft Tissue Sarcomas and Metastatic Bone Disease

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**Background:** Peri-operative anaemia is associated with increased risks of post-operative complications, blood transfusion and mortality. Correction of anaemia with peri-operative IV iron supplementation has been shown to reduce transfusion requirements and improve outcomes in other surgical specialties.

## Existing work:

### **Elective arthroplasty**

- Pre-op IV iron is safe and effective for correction of anaemia, reduction of transfusion rates and length of stay (2)

### **Colorectal cancer:**

- High prevalence of IDA, independently associated with increased post-operative complication rate (3).
  - o IV iron therapy decreases transfusion rate and length of stay (4,5)

### **The ESMO guideline (6) states:**

- IV iron is more effective for Hb optimisation as vs. oral iron therapy
- Iron therapy reduces the number of patients receiving blood

## **Aims:**

- **Phase 1:** Identify the need for transfusion and associated morbidity in our patient group.
- **Phase 2:** Determine the prevalence of iron deficiency anaemia (IDA) and assess association of IDA with peri-operative transfusion requirements and complication rates.

**Hypothesis:** By identifying the presence of occult IDA, and impact on peri-operative transfusion requirements we can target these patients for peri-operative optimization.

## **Methods:**

- Multi-phase retrospective studies of all resections of bone and soft tissue sarcomas, as well as metastatic bone disease at a single tertiary referral centre

## **Data collected on:**

- **Patient Demographics:** diagnosis, metastases, pre-op chemo/radiotherapy, anti-coagulation, co-morbidities
- **Surgical factors:** procedure, TXA, revision surgery, infection
- **Haemoglobin:** Pre- and post-operatively
- **Transfusion** requirement & Oral Iron supplementation on discharge

Following Phase 1 results, routine pre-op Iron studies and Phase 2 of data collection to analyse association of Iron studies with transfusion requirement.

## **Results:**

### **PHASE 1**

1<sup>st</sup> January – 1<sup>st</sup> September 2020  
127 Patients

**Routine PRE-OP Fe Studies**

### **PHASE 2**

1<sup>st</sup> November 2020 - 1<sup>st</sup> July 2021  
87 Patients

**Proposed Next Step**

### **PHASE 3**

**Routine peri-op IV Fe for IDA patients**

**Demographics:** Mean age: 57 years, 80 M: 47 F

**Mean Hb(g/L):** Pre-op: 127 → Post-op: 107

- **34 patients (27%) transfused:** Mean 2.4 units/patient
  - o 5-fold increase wound complications (26% vs 5.3%)
  - o Doubled Mean length of stay: 20.2 days (vs 9.6)
  - o Required in 35% of bone sarcoma resections and 67% hemipelvectomies
  - o 7.5% of patients NOT transfused discharged on oral Iron

**PHASE 1 Conclusion: High burden transfusion & associated complications in this group of patients**

**Demographics:** Mean age: 57 years, 45 M: 42 F

**Mean Hb(g/L):** Pre-op: 126 → Post-op: 96

**Mean Serum Iron (ug/dl):** 9.8 (normal range 11.6-31.3)

- **30 patients (34%) transfused:** Mean 2.3 units/patient
  - o 83% iron deficient (mean serum iron 6.75ug/dl)
  - o Despite pre-op Hb >120, 12 patients required transfusion
    - o 10/12 had occult Iron deficiency
  - o Only 11.5% non-Iron deficient patients transfused
- **53 patients (61%) Iron deficient**
  - o 52% IDA required transfusion

**PHASE 2 Conclusion: Occult IDA is a strong predictor of transfusion. Only 2.3% of patients with Hb>120 and normal serum iron requiring peri-operative transfusion**

**Proposed Next Phase: pre-op Iron Studies and peri-operative IV Iron transfusion in all Iron Deficient Patient and assess implication on blood transfusion rates.**



## **Conclusions:**

- Peri-operative anaemia is a significant problem in our patient cohort. We have identified that iron deficiency is a significant risk factor for requiring peri-operative transfusion.
- Targeted optimisation prior to surgery could potentially reduce the transfusion requirements, associated morbidity, post-operative complications and length of stay.