

# The impact of pre-operative anaemia on length of stay, complication rates, readmission to hospital and death within 6 months on a colorectal patient population in a UK District General Hospital

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## INTRODUCTION

The definition of pre-operative anaemia is Haemoglobin (Hb) <130g/L and is associated with adverse outcomes. (3)

Pre-operative anaemia should be investigated and treated where possible (1)

Iron deficiency anaemia can be identified by measuring Hb, serum ferritin, TSAT percentage and CRP, and can be treated by oral or IV iron supplementation (1)

We introduced a cost-effective pre-operative iron deficiency anaemia pathway for colorectal patients in 2017 with identification of anaemia taking place in pre-operative assessment clinics, and administration of IV iron in the Multidisciplinary Day Centre run by the geriatric department in our Trust

Pre-operative anaemia was identified and treated according to local guidelines, which aligned with the international consensus (1) and Preop.org guidelines.

## REFERENCES

- (1)Munoz M, Acheson AG, Auerbach M, et al. International consensus statement on the peri-operative management of anaemia and iron deficiency. *Anaesthesia* 2017;72:233-47
- (2)WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva, World Health Organization, 2011 (WHO/NMH/NHD/MNM/11.1) (<http://www.who.int/vmnis/indicators/haemoglobin.pdf>, accessed 31/03/2019)
- (3)Musallam KM, Tamim HM, Richards T, Spahn DR et al. Preoperative anaemia and postoperative outcomes in non-cardiac surgery: a retrospective cohort study. *Lancet* 2011;378: 1396-407.
- (4)Grocott M et al. The Postoperative Morbidity Survey was validated and used to describe morbidity after major surgery. *J Clin Epi* 60 (2007) 919-928

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## AIMS

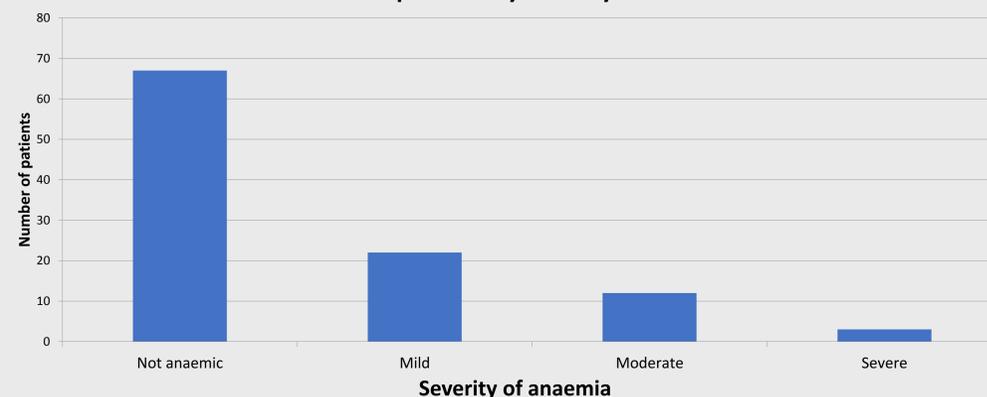
To investigate whether the PQIP database could inform our management of pre-op iron deficiency and to investigate whether there was any relationship between pre-op Hb and outcome including length of stay, readmission rates within 30 days, death at 6 months after surgery or complication rate for elective colorectal cancer surgery in our institution

## METHODS

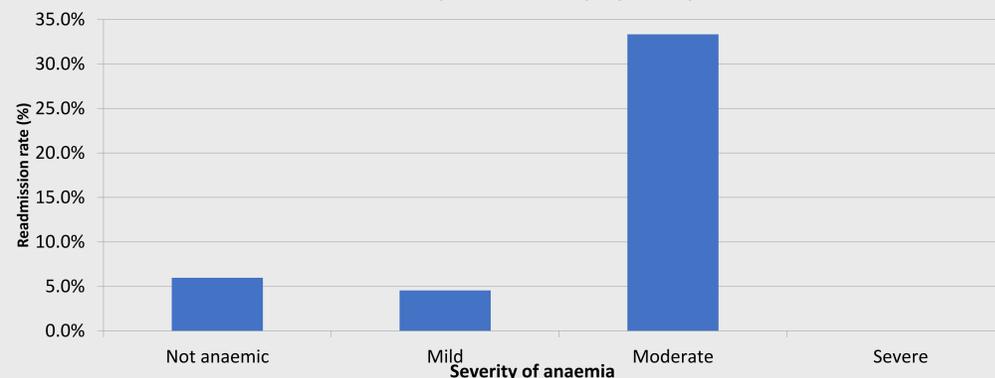
This retrospective study looked at 110 patients who underwent major colorectal surgery for malignancy from January – June 2018. Anaemia was defined according to the World Health Organisation classification based on haemoglobin levels (g/L): mild (110-129), moderate (80-109), severe (<80).(2)  
Outcomes included length of stay, post-operative complications which were defined according to the postoperative morbidity survey (POMS)(4), readmission to the hospital within 30 days of surgery, or death at 6 months.

## RESULTS

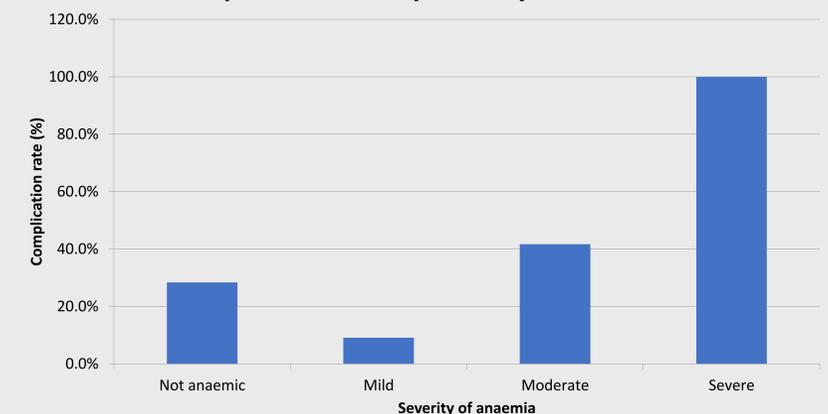
Number of patients by severity of anaemia



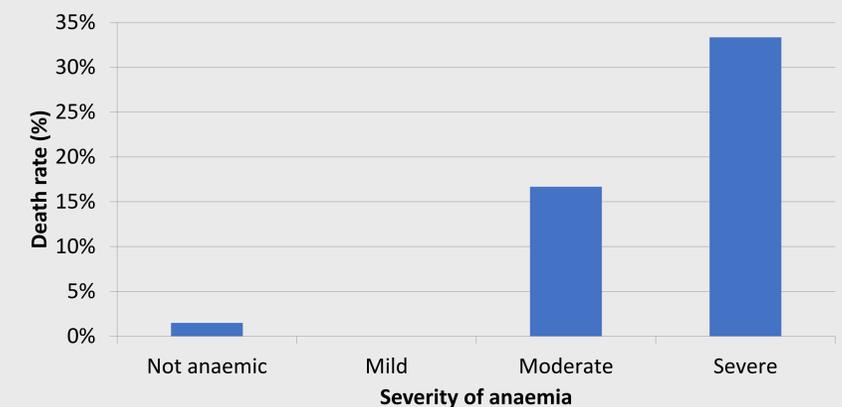
Readmission rates to hospital within 30 days by severity of anaemia



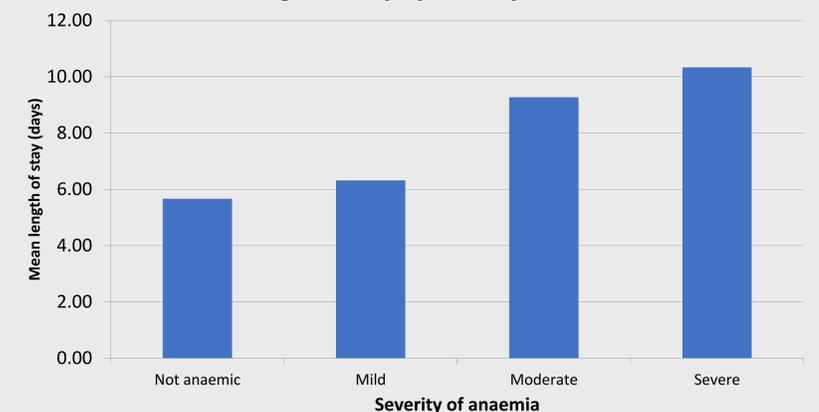
Complication rate by severity of anaemia



Death within 6 months of surgery by severity of anaemia



Mean length of stay by severity of anaemia



## CONCLUSIONS

Amongst anaemic patients, increasing severity of anaemia was associated with increased readmission to hospital within 30 days, complication rates and death rates within 6 months of surgery. Readmission rates, death rates, and complication rates were lower in patients with mild anaemia than non-anaemic patients.

Mean length of stay was higher in patients with mild anaemia than in non-anaemic patients

The PQIP data shows an association between moderate and severe anaemia and adverse outcomes. This relationship does not exist for mild anaemia, where all adverse outcomes except for length of stay are reduced compared to non-anaemic patients. This may be taken into consideration when implementing pathways for investigation and treatment of perioperative anaemia.

More data is needed to clarify the nature of the relationship between severity of anaemia and outcomes.