

Introduction

- 44% of patients presenting with a hip fracture are anaemic
- Rising to 87% following surgery¹
- Anaemia in this cohort of patients increases mortality²
- Studies demonstrate that anaemia has an adverse effect on morbidity and quality of life (QoL) indicators³.
- Hip fracture patients consume significant proportions of blood products peri-operatively
- This has morbidity and mortality implications for individual patients and financial implications at a trust level
- Blood products are a finite resource under increasing pressure in recent times (Figure 1)

The Belfast Health and Social Care trust performs approximately 1200 hip fracture operations per year

We audited the incidence of anaemia and its subsequent management in our trust to gain an understanding of its impact on our service and potentially identify areas of improvement

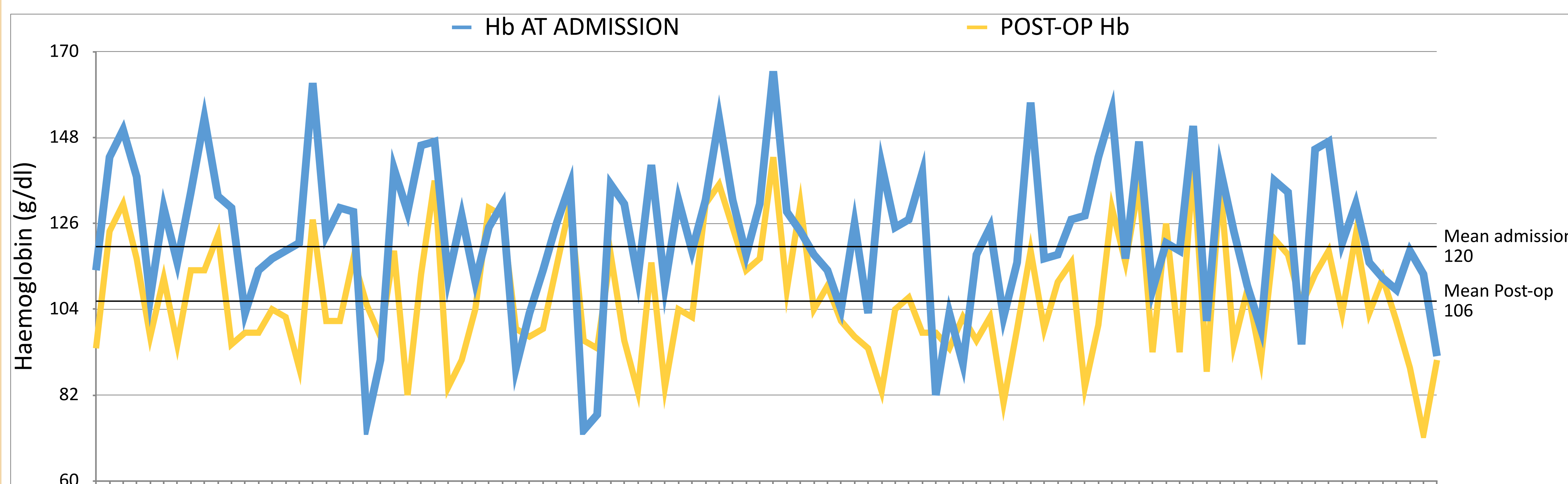
Methods and Materials

- We included 100 patients between August and October 2021
- Data was collected prospectively using the patient notes and electronic care record (ECR) as sources.

We collected data on:

- general demographics
- Hb on admission, day of surgery and post-op
- pre and post-op iron studies
- use of oral or IV iron
- use of Tranexamic acid
- blood transfusion
- length of stay (LOS)
- 5 and 30 day mortality.

Chart 1. Hb on admission vs post-op Hb



Memo: 14 October 2022

Reminder: NIBTS Pre Amber Alert – low stock Group O Rh(D) Pos, Group O Rh(D) Neg, Group A Rh(D) Pos

Northern Ireland Blood Transfusion Service (NIBTS) issued, 29th September 2022, a pre amber alert for low stocks of the blood groups O Rh(D) Pos, O Rh(D) Neg, A Rh(D) Pos. This is a precautionary notification to all Trusts to inform of potential supply issues – it is intended to prevent the requirement to move to amber alert.

Figure 1. NIBTS Pre-Amber alert

Results

- 49% of patients were anaemic on admission
- Increasing to 82% post-operatively
- 41% of patients received a blood transfusion
- 69 units of blood were transfused in total

Only 30% of patients had pre-operative iron studies and 3% post-operatively.

16 patients were already taking oral iron on admission
4 patients were commenced on oral iron post-operatively

THERE WAS NO USE OF IV IRON

70% of patients received Tranexamic Acid intra-operatively (a more recent audit has demonstrated > 90% use in our department).

	Pre-op Oral Iron	Pre-op IV Iron	None
Number of Patients	16	0	84
	Post-op Oral Iron	Post-op IV iron	None
Number of Patients	20	0	80

Table 1. Pre-op and Post-op Iron replacement

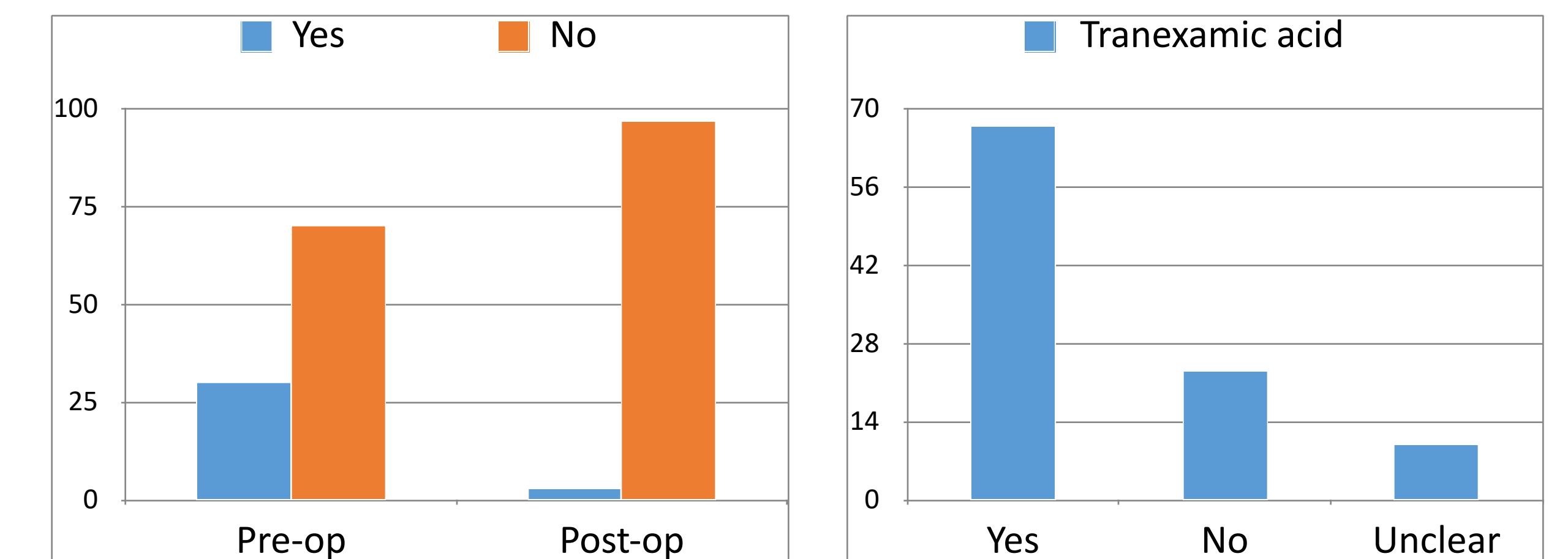


Chart 2. Pre-op and Post-op Iron studies

Chart 3. Use of Tranexamic Acid

Discussion

Our data has demonstrated that the incidence of anaemia amongst hip fracture patients within the Belfast Trust mirrors that in many international publications. Almost half of our patients are anaemic on admission with greater than 80% anaemic post-operatively. As shown in Chart 1, every patient recorded a fall in their Hb from admission into the post-operative period.

We demonstrated the under utilisation of iron replacement, both orally and intravenously and sporadic use of iron studies. A recent meta-analysis⁴ couldn't demonstrate a reduction in LOS or blood transfusion requirement following IV iron administration. However, it did recognise that the data was of low quality and recommended higher quality studies with patient centred outcome measures in future.

If we extrapolate our data, **we administer over 800 units of packed red cells per year in this cohort of patients costing in excess of £120,000.**

Can we reduce our consumption of blood products and improve patient outcomes with the introduction of a Patient Blood Management (PBM) pathway?

Recommendations

We have identified potential areas for development:

- **Increase utilisation of IV iron** – targeting improvement in functional outcomes
- **Increase use of Tranexamic Acid** - potentially earlier administration (project ongoing)
- **Reduce transfusion triggers in patients deemed low risk** – target Hb 85?
- **Is ROTEM useful?**
- **Are iron studies indicated in all patients prior to IV iron?** – Can we assume iron deficiency as cause? (Project ongoing)
- **Target time to surgery < 48 hours**
- **Need for Patient Blood Management (PBM) Pathway**

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References

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2. Potter LJ, Doleman B, Moppett IK. A systematic review of preoperative anaemia and blood transfusion in patients with fractured hips. *Anaesthesia*. 2015;70(4):483–500.
3. Hagino T, Ochiai S, Sato E, et al. The relationship between anemia at admission and outcome in patients older than 60 years with hip fracture. *J Orthop Traumatol*. 2009;10(3):119–122.
4. Sinclair RCE, Bowman MJA, Moppett IK, Gillies MA. Perioperative intravenous iron to treat patients with fractured hip surgery: A systematic review and meta-analysis. *Health Sci Rep*. 2022 May 22;5(3):e633.