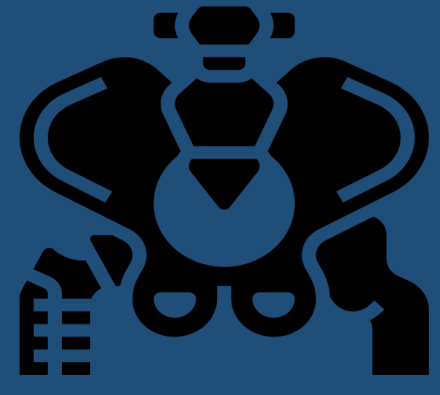
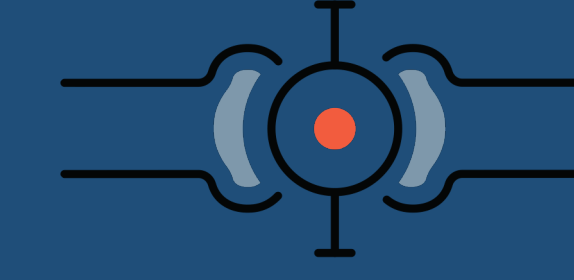


Determination of red cell transfusion incidence in lower limb arthroplasty: can a predictive tool reduce such incidences?



Ochogwu J¹, Murthy S¹, Nnene C³
James Paget University Hospital Department of Orthopedics



BACKGROUND

A significant proportion of patients undergoing total hip and knee replacements require red blood cell (RBC) transfusion. Although this can be lifesaving, there is increasing emphasis on the clinical risks and associated morbidity. Additionally, there are other challenges like cost and availability.

INTRODUCTION

Preoperative anaemia is defined as haemoglobin (Hb) <130g/l in males and <120g/l in females.(1) It remains an independent risk factor for increased morbidity and mortality, for which iron deficiency is the most common anaemia revealed by preoperative screening.(1)

Ideally, patients undergoing planned surgery should have their Hb checked 6 weeks in advance, to allow time for surgical optimisation preoperatively to reduce risk associated with blood loss and transfusion.(1)

NICE guidelines recommend that patients with Hb<120g/l are offered alternatives to transfusion.(2)

Therefore, we aim to determine the incidence of RBC transfusion, and compliance with NICE guidelines. In doing so ascertain if a predictive tool could reduce the incidence of transfusion.

MATERIALS AND METHODS

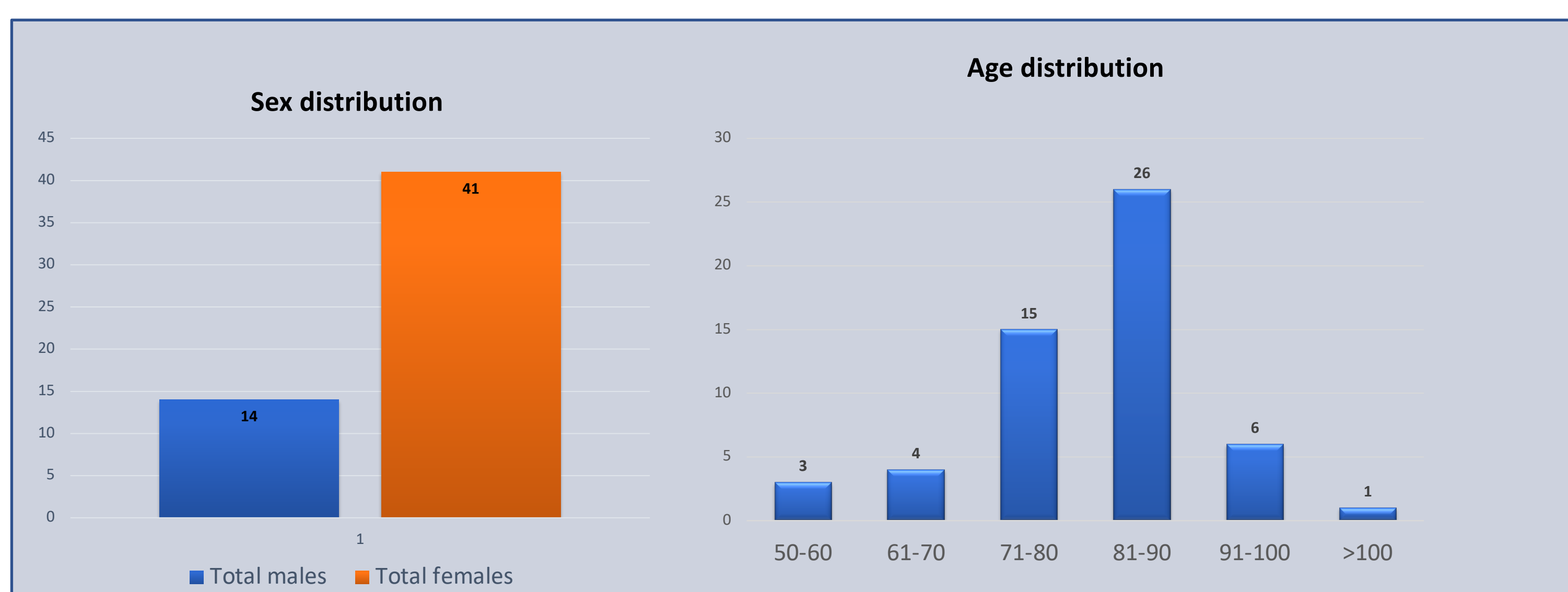
A retrospective audit was carried out on all patients who underwent primary/revision hip and knee arthroplasty from November 2020 to May 2021 in a district general hospital (DGH) in England.

Data was collected using an Electronic Health Record database.

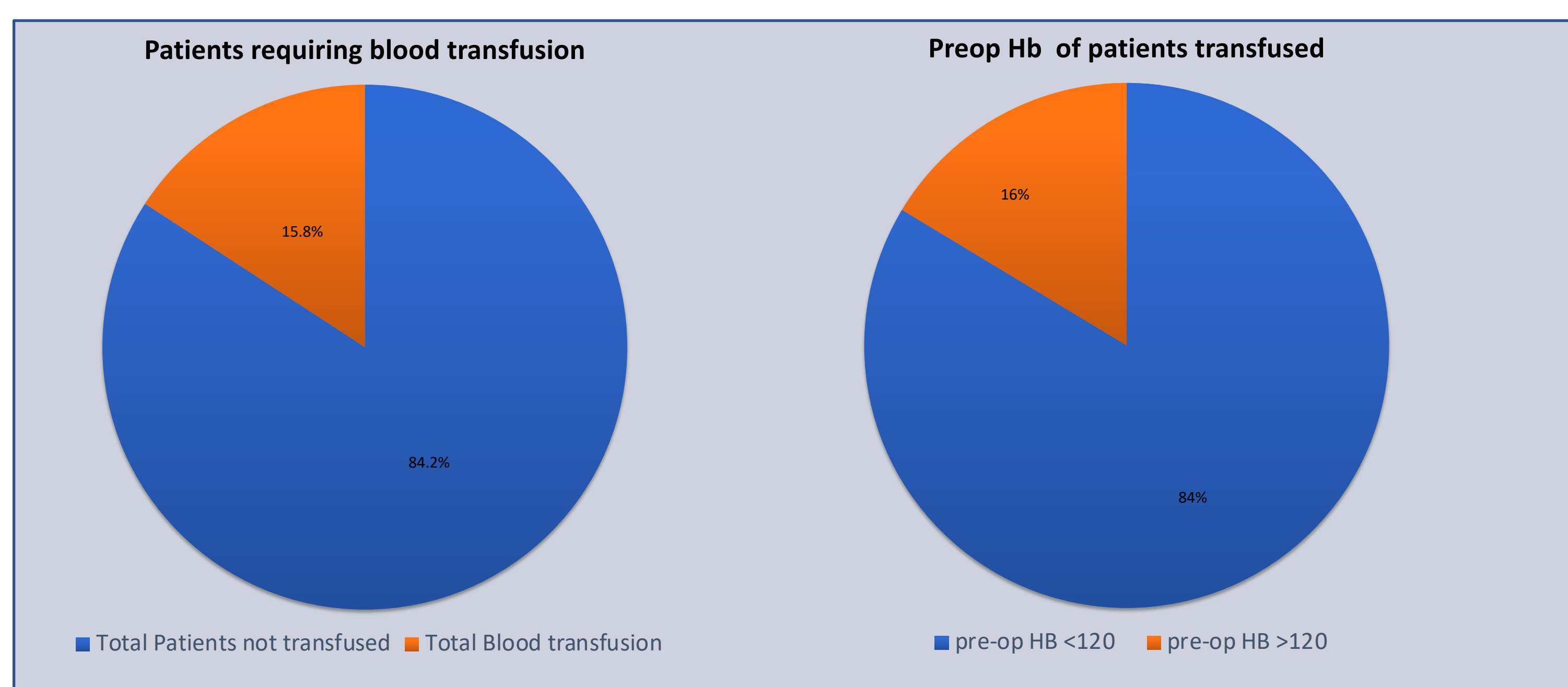
RESULTS

A total of 348 patients had lower limb arthroplasty.

75% were females and 25% were males, with the age distribution being between 50-100, at a mean age of 81-90 years old.



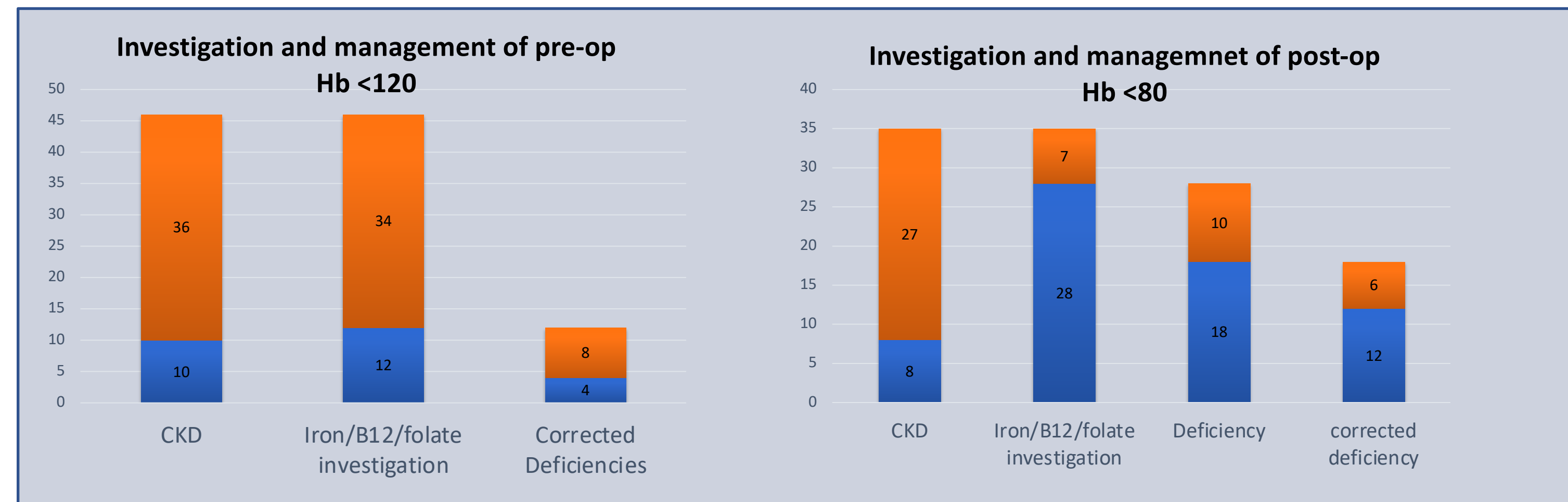
55 (15.8%) patients had RBC transfusion. 46 (84%) of the transfused patients had pre-operative anaemia



RESULTS

Pre-operatively, 10 (21.7%) had CKD, 12 (26%) were investigated for deficiencies, and 4 had the deficiency corrected.

Post-operatively, 28 (80%) patients who met the transfusion threshold were investigated. 18 (51.4%) were found to have iron/B12/Folate deficiencies, and 12 (66%) corrected.



Based on these results and the NHS RBC transfusion tariff being at £145.99 per standard red cell.(3) The DGH incurred a possibly preventable excess of £5,255 to the NHS.



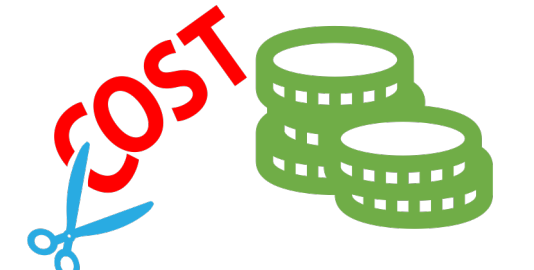
An average 2 units of red cell were transfused/patient (55)



Total cost = 145.99 x 110 = £16,059



18 patients had iron/b12/folate deficiency



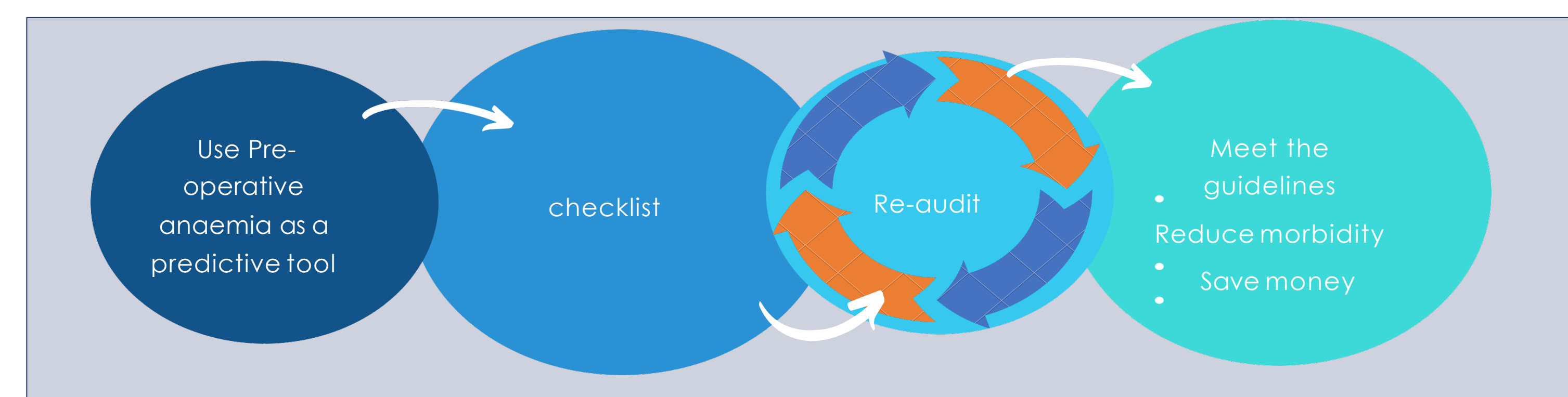
How much can be saved = (145.99 x 36 = £5,255.6

LIMITATIONS

- A single cycle audit
- Small sample size
- Does not clearly identify inclusive and exclusive criteria's such as trauma vs elective cases.

RECOMENDATIONS

- Increase education and staff training with respect to guidelines (pre-operative anaemia being offered alternatives to transfusion).
- Repeat the audit.
- Compare findings with different hospital trusts.
- Larger sample size.
- Longer time frame.
- Implement checklist prior to surgery, ensuring patients are screened for anaemia and managed appropriately.



CONCLUSION

- A main predictive indicator to determine the need for RBC transfusion in patients undergoing lower limb arthroplasty is the pre-operative Hb.
- Patients with anaemia are not consistently evaluated to ascertain the etiology before lower limb arthroplasty.
- Clear guidelines and a checklist are prudent to identify, investigate, and manage patients pre-operatively. To reduce the morbidity, cost, and risks associated with red cell transfusion, adhering to the NICE guidelines.

REFERENCES

1. PAC,Transfusion Guidelines 5th ed. [internet].updated 2015 Jan, cited 2022 Aug 31.URL: <https://www.transfusionguidelines.org/transfusion-handbook>
2. Blood transfusion NICE guideline. Blood transfusion. [internet].updated 2015 Nov 18, cited 2022 Aug 31.URL:<https://www.nice.org.uk/guidance/ng24/chapter/Recommendations#blood-transfusion-algorithm>
3. NHS bloods and transplant pdf. Blood and component full cost. PDF.URL:https://nhsbtatbe.blob.core.windows.net/umbraco-assets-corp/22825/price_list_bc_nhs_full-cost-per-item_2021-22.pdf