

INTRODUCTION

An audit of blood use in orthopaedics and trauma (excluding polytrauma) in Ninewells Hospital conducted in 2008 revealed a peri-operative transfusion rate of 40% overall (48% for total hip replacement and 35% for total knee replacement). The audit also revealed poor documentation of the reason for transfusion.

These results were presented to the Department of Orthopaedics and Trauma, in conjunction with national comparative data on blood use acquired from "Account for Blood"⁽¹⁾. A programme of change was undertaken and a fledgling patient blood management programme was introduced. A follow-up audit was carried out in 2014 and the results are presented below.

AIM

To complete the audit cycle of transfusion practice in the Department of Orthopaedics and Trauma, Ninewells Hospital in 2014 following the introduction of pre-operative optimisation of haemoglobin (since 2011), more widespread use of intra-operative cell salvage (since 2010), and education of medical and nursing staff on better blood transfusion through the "learnbloodtransfusion" module.

METHOD

We prospectively reviewed all orthopaedic cases between April and June 2014, over 2-month period in Ninewells Hospital. Patients who received blood transfusion were identified.

Data collected included:

- Pre-operative haemoglobin (Hb) levels;
- Co-morbidities;
- ASA score;
- Pre-transfusion Hb levels;
- Documentation of indication for transfusion;
- Documentation of discussion of transfusion risks;
- Post-transfusion Hb levels; and
- Discharge Hb levels.

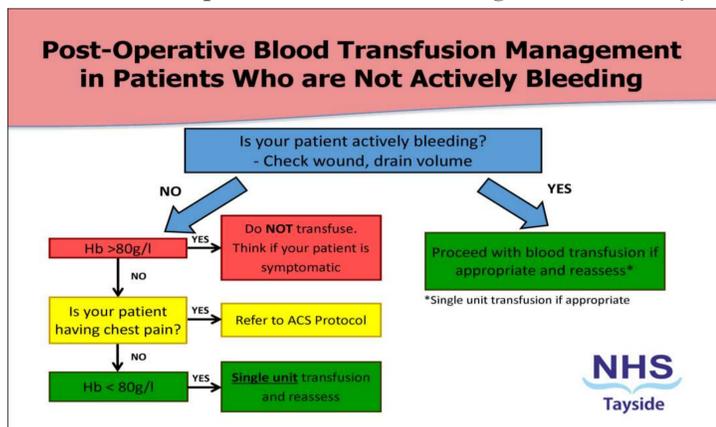
CONCLUSION

- ❖ There has been an overall improvement in the transfusion rate since 2008 from 40% to 7.4%.
- ❖ Over-transfusion on the post-operative ward remains a challenge. Documentation of the discussion with the patient regarding transfusion needs to improve.
- ❖ The pre-operative optimisation of Hb pathway is not robust, despite involving primary care and pre-operative assessment clinic in the development of the clinical pathway. Work is currently taking place in the pre-operative assessment clinic to improve optimisation of Hb.
- ❖ Some consultant orthopaedic surgeons have agreed to adopt the single unit policy.

FUTURE WORK

- ❖ A post-operative anaemia management pathway has been developed to encourage the single unit policy as recommended by SHOT⁽⁴⁾ (Figure 1&2).

Figure 1: The "Post-operative Anaemia Management Pathway" guidance.



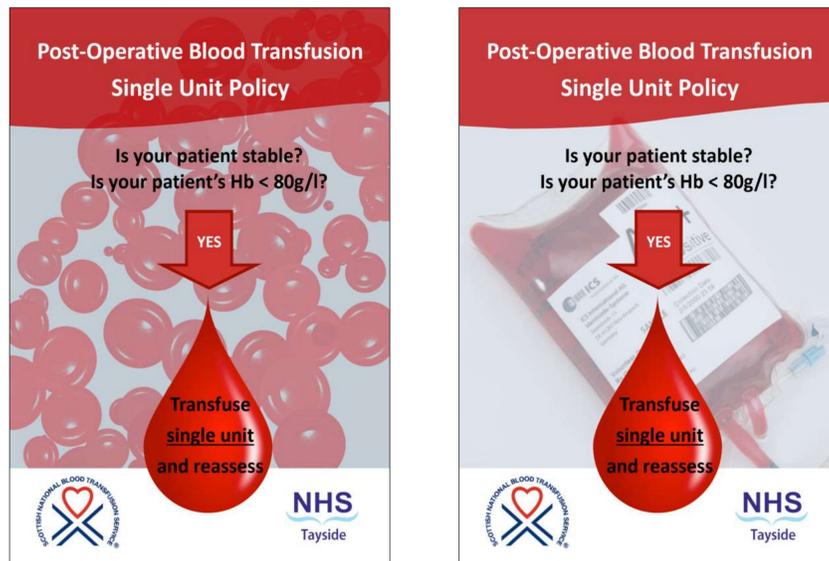
RESULTS

- ❖ 524 procedures were carried out on 500 patients. There were 49 transfusion episodes in 37 patients – an overall transfusion rate of 7.4%.
- ❖ 8 were intra-operative transfusions and 41 were post-operative transfusions.
- ❖ The average age of the transfused group was 73 years-old and 19/33 patients were ASA 3.
- ❖ The pre-operative Hb was lower in patients who received a transfusion, but the final Hb levels in both groups were similar.
- ❖ 43/49 (88%) transfused patients had a post-transfusion Hb level $\geq 90\text{g/l}$.
- ❖ 71% of those transfused received 2 units of blood, irrespective of their pre-transfusion Hb.
- ❖ The reasons for transfusion were documented in the medical notes in 80% of cases; 65% were for low Hb and 14% were for blood loss.
- ❖ In 29% of the cases transfused, the discussion with the patient was documented.

DISCUSSION

- ❖ The overall transfusion rate has improved significantly from 40% in 2008 to 7.4% in 2014. This is mainly as a result of widespread use of intra-operative cell salvage.
- ❖ In patients who were transfused, the average pre-op Hb was 114g/l. This concurs with evidence that pre-optimisation of Hb to above 130g/l reduces the need for intra-operative transfusion⁽²⁾. The system for pre-optimisation of Hb in Ninewells Hospital is not yet robust enough, so some patients are still receiving elective surgery despite unoptimised Hb.
- ❖ Documentation of the reason for transfusion is much improved since 2008. Further improvement in documentation of the discussion with the patient is required.
- ❖ The median number of units transfused post-operatively was 2 irrespective of the pre-transfusion Hb concentration. Anecdotal evidence suggests this is due to an adherence by senior medical staff to a more traditional approach to transfusion.
- ❖ We have presented this data to orthopaedics, along with evidence from the FOCUS trial and the recommendation from SHOT for a single unit transfusion policy^(3,4). The single unit policy has been accepted into practice by some of the orthopaedic consultants.

Figure 2: The "Single Unit Policy" posters.



REFERENCES

1. Account for Blood, Scottish Transfusion Epidemiology Database (STED), Better Blood Transfusion, SNBTS. 2. Salido *et al.* JBJS 2002; 84A (2): 216 – 220. 3. Carson *et al.* NEJM 2011; 365: 2453 – 2464. 4. Annual Serious Hazard of Transfusion (SHOT) Report 2013.

ACKNOWLEDGEMENTS

Dr Kate Forrester, Blood Transfusion Researcher, SNBTS; Orthopaedic Department secretaries and nursing staff; Medical record staffs; Mr Ian Christie, Department of Orthopaedics and Trauma; Trudi Gallagher, Western Australia State Patient Blood Management Clinical Coordinator.