Peri operative Blood Management and Transfusion Practice for Children Undergoing Major Elective Surgery

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Background

Children undergoing major procedures are at risk of peri operative anaemia, allogenic blood transfusion and all the associated complications of these. We proposed that improvements in pre operative identification of iron deficiency anaemia and intra operative blood conservation strategies with a Patient Blood Management package could reduce these complications.

The Patient Blood Management Package

- Correction of pre operative anaemia
- Tranexamic acid
- Cell Salvage
- Hb < 70 for transfusion*

*Providing no ongoing blood loss, clinically stable and no co-morbidities

Methods

A prospective audit was undertaken in Sheffield Children's Hospital between July 2019 and July 2020 of children undergoing major Orthopaedic, spinal and Neurosurgical procedures deemed high risk of blood loss.

163 audit forms were initiated and the notes reviewed by the anaesthetic registrar using the anaesthetic record, operation note, discharge summary, pharmacy chart, blood transfusion records and cell salvage records. The results were compared to those from a similar audit undertaken in the 2017 calendar year.

Results

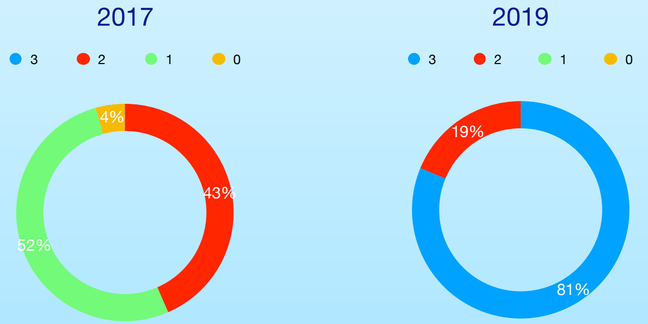
Results from the re-audit showed an improvement in all areas of preoperative blood management with the exception of use of a tranexamic bolus, although the use of tranexamic acid infusions increased.

	2017	2019	Change
Anaemia identified pre operatively	7.4%	10.4%	**3% increase**
Iron deficiency identified pre operatively	18.9%	38.2%	**19.3% increase**
Pre operative iron supplementation	23%	64.7%	**41.7% increase**
Cell salvage used	43%	66.8%	**23.8% increase**
Tranexamic acid infusion	74.2%	75.4%	**1.2% increase**
Allogenic transfusion	13.7%	9.8%	**3.8% decrease**
Reason for transfusion documented	54%	87.5%	**33.5% increase**

Importantly there was a decease in the number of children requiring allogenic blood transfusion and the total number of units transfused was also lower: with 31 units of blood transfused for 175 patients in 2017 (maximum 4 units per patient) compared to 16 units of blood transfused (maximum 1 unit per patient) in 2019.

Of the children who required allogenic transfusion 81% had 3 forms of peri operative blood conservation management (including pre-operative iron if anaemic) and 19% had 2 forms. No children had 1 or 0 forms.

Number of blood conservation strategies used in patients who required allogenic transfusion



Conclusion

Following the implementation of the 'Patient Blood Managment' package there has been improved compliance with NICE guidance on iron supplementation preoperatively and allogenic blood transfusion has reduced with increased use of intra operative blood conservation strategies.

A potential area for future development is the management of post operative iron deficiency and anaemia in patients who do not meet the criteria for transfusion.

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