Establishing a maximum surgical blood ordering schedule (MSBOS) for elective surgeries

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Introduction

The last known Maximum Surgical Blood Ordering Schedule (MSBOS) for use at the Auckland City Hospital was developed in the late 1980s. Since then transfusion practice has changed considerably making some of the assumptions irrelevant.

A project was initiated in 2013 to put into place an updated elective MSBOS to create an evidence-based institution specific MSBOS to understand our current transfusion rates and identify the number of unnecessary group and holds (G&H) that were taking place in the organisation.

The project was launched under the existing Blood is a Gift – Blood Management programme that has been running within Auckland City Hospital and Greenlane Clinical Centre since 2008.

Aim

The aim of the project was to attain the following objectives:

- Create an MSBOS for elective surgical procedures which was derived from local transfusion data
- Identify the number of unnecessary G&H performed for elective surgical procedures

Methods

Data was extracted and then analysed from three systems via the data warehouse. These were the Case management system (CMS), Patient information management system (PIMS) and data from the New Zealand blood service (NZBSS).

Data for three years was analysed from July 2011 – June 2014 for all adult patients having elective procedures with an overall 55,198 procedures being included in the analysis. Data for paediatric patients, obstetric presenting for Caesarean section and acute surgeries (including return to OT post-elective procedures) was excluded from the analysis.

The procedures were categorised into 11 surgical specialties and 102 procedures based on ICD-10 coding system. The ICD-10 codes were then given a grade 1-3 (1 = major; 3 = minor) and where there was a case with multiple procedures, the procedure with highest grading was used for analysis.

For each procedure category, the following fields were captured,

- Number of patients who had or not had a group and hold
- Number of patients who had RBC transfusion
- Number of RBC units transfused
- High risk of bleeding (yes/no)

The following fields were also calculated

- Transfusion rate
- Transfusion index (Total RBC units / total number of pts.)
- >4 units RBC transfused in >10% patients
- Feedback from surgical and anaesthesia groups to set parameters of operations where blood must be available immediately despite low transfusion risk
- Cost benefit analysis was done with tests costs NZD $45 only and excluded maintenance of equipment and personnel costs.

Results

The analysis showed that in the time period for which data was analysed.

- 80.7% patients had procedures met criteria for the “no G&H” and 19.3% met criteria for “G&H”.
- 6,235 G&H were done unnecessarily,
- 344 patients did not have G&H when they were required.

A rules based flowchart (right) was developed based on local factors and referenced to the algorithm developed by (Frank, Rothschild et al. 2013)

Conclusion

The analysis highlighted a potential 37% reduction in current number of Group and Holds being done at Auckland City Hospital and Greenlane hospital, with economic benefit from implementation being approx. $97,320 per annum or a saving of $292,185 over 3 years. The MSBOS has been approved in principle by the hospital surgical board and is being discussed with various departments to gather feedback post which any changes will be made and it will be implemented. Further improvements in G & H ordering in acute surgical patients will follow.

References