December 2009

Blood Stocks Management Scheme

BSMS Spotlight

... on INNOVATIVE INVENTORY MANAGEMENT

Introduction

Innovation is the introduction of something new and in this edition of 'Spotlight' it is applied to inventory management of blood components.
Two hospital articles focus on empowerment of hospital laboratory staff to question requests for blood that do not conform to local guidelines.
Both hospitals in implementing protocols for management of anaemia achieved significant reductions in red cells transfused.
A Regional Transfusion Committee asked one of their member hospitals to investigate if the increased regional demand for O Negative red cells could be influenced by their hospital. The report demonstrates the unpredictability of blood component demand in hospitals.
The fourth article looks at the process leading to a decision to hold a stock of platelets. It highlights the improvements when a stock of platelets is held. No significant increase in platelet wastage has been seen and reductions in patient waiting times for platelet transfusions were achieved.
A key factor in all these cases is the use of data to evidence decisions and to monitor progress. Participation in the Blood Stocks Management Scheme (BSMS) provides the tools for hospitals to both evidence and monitor their inventory management practice.

Inside this issue:

1. Empowerment - reducing transfusion

The Newcastle upon Tyne Hospitals Foundation Trust implemented a protocol for post operative anaemia and medical anaemia in July 2006 with the aim of reducing the amount of red cells transfused to patients. BMS staff were empowered to question requests and to refuse any they deemed unnecessary or refer to a Consultant Haematologist.

Learning Points

An audit undertaken three months after the introduction of the guidelines showed an 11% decrease in red cell transfusion for medical cases. The guidelines are widely accepted within the Trust and continue to limit red cell transfusions.

Guidelines

1. If the last full blood count was received more than 3 days ago inform the doctor and request a fresh sample.
   Specimens will be grouped and saved but no blood issued until the latest result is available.
2. Assume one unit of red cells raises the haemoglobin by 1g/dl in adult patients.
3. Patients with known bone marrow failure e.g. haematology patients. Top up transfusion of 3 units allowed based on symptoms and haemoglobin result from sample received in last 7 days.
4. Intravenous iron can be given for iron deficiency.
5. Haemoglobin greater than 8g/dl but less than 10g/dL (Hct 24-30%) only transfuse if recent coronary event, very symptomatic, frail and high risk of coronary disease.
6. Haemoglobin result between 7- 8g/dL (Hct 20-23%), issue 1 unit of red cells.
7. Haemoglobin result between 6 - 7g/dL (Hct 18-20%), issue 2 units of red cells then reassess.

2. Impact of holding a stock of platelets

Queen Elizabeth Hospital, King's Lynn, conducted a study looking at whether they might hold a stock of platelets. Real events were used to look at the expected number of stock platelets ordered and based on an ideal of two days expiry from delivery, how many may be wasted.
The results from an initial three month theoretical modelling exercise showed little increase in wastage. A successful three month trial was extended to 12 months. The results and impacts are discussed.

Key Outcomes

Table 1 shows the results of the 12 month trial with a stock of platelets and compares it to the previous 12 months without a stock of platelets.

- A reduction in both ad hoc and emergency deliveries of approximately 60% .
- Reduction in the total number of platelet doses ordered when compared with previous year.
- No increase in platelet wastage

There were clinical benefits resulting from holding a stock of platelets.

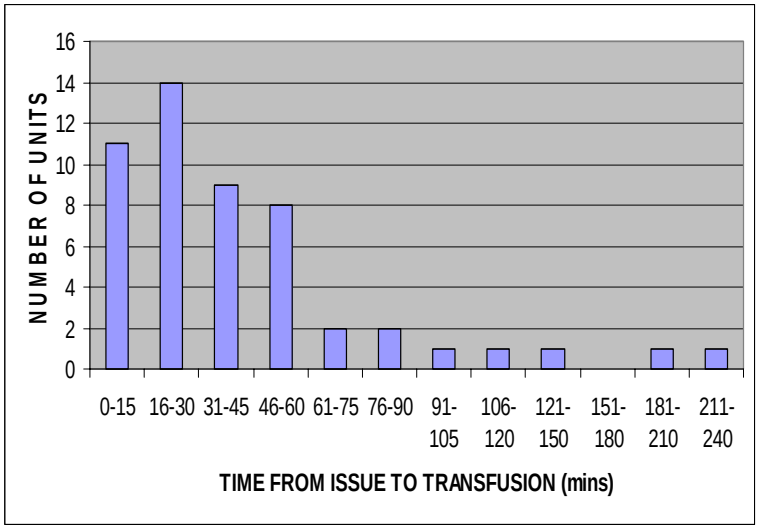
- 60% of the stock platelets were transfused to haematology patients. Patients spend less time waiting for a platelet transfusion.
- Ability to supply platelets quickly in a clinical emergency rather than waiting for a delivery from the blood service. An emergency delivery from the blood service takes 1 hour 55minutes. Figure 1 shows that 80% of platelets were transfused before a delivery would have been received, and 50% were administered within thirty minutes.
- Decrease in platelet orders may be due to case mix effect but the reduction could be explained by a decrease in clinicians ordering two doses 'just in case'.

Table 1. Comparison of stock platelet trial results with previous years' data

	12 MONTHS WITH STOCK PLATELETS	12 MONTHS WITHOUT STOCK PLATELETS
ADHOC DELIVERIES (for platelets)	115	195
EMERGENCY DELIVERIES (for platelets)	16	35
TOTAL PLATELET DOSES ORDERED	489	619 [1]
TOTAL PLATELET DOSES WASTED	45	52 [2]

[1] Average figure from previous four years
[2] Average figure from previous five years

Figure 1 Time taken for stock platelets to be transfused in emergency cases.



Learning Points

- Meticulous platelet inventory management is key in keeping wastage to a minimum.
- Holding a stock of platelets can improve availability for transfusion hence improving clinical effectiveness.
- Reduction in extra deliveries reduces cost and pressure on both hospital and blood service staff.
- Good working relationships between laboratory and clinical staff have been enhanced improving the management of cases.
- Group A or O, irradiated, HT and CMV negative component donation platelets with shelf life of two days are requested from the blood service. Flexibility and collaboration between the hospital laboratory and the blood service is essential.

3. O Negative - Where did it all go?

The South Central Regional Transfusion Committee review their regions blood usage as an agenda item. It was noted that during the second quarter of 2008 O Rh D negative issues appeared to increase before returning to a more normal pattern in the third quarter (Fig 2).

Fig 2. South Central RTC O Negative red cells 2007-08

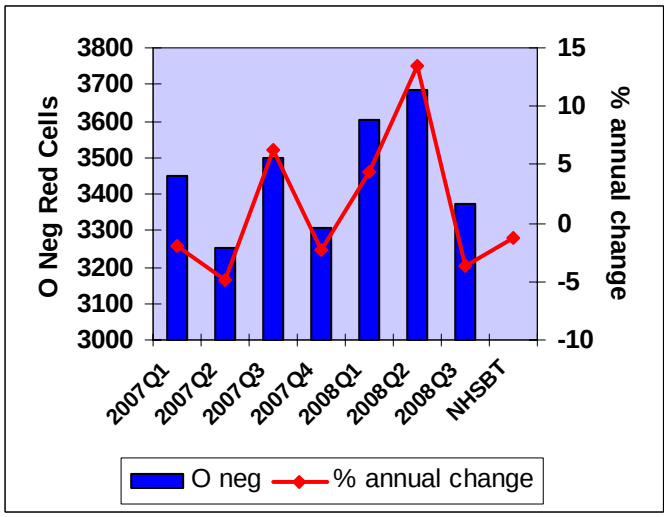
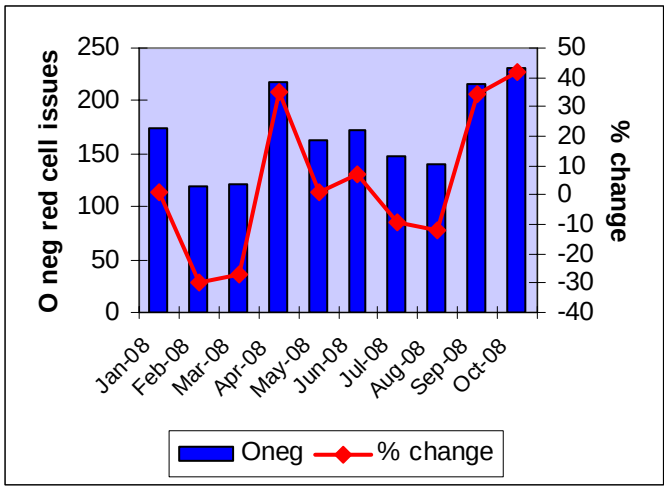


Fig 3. O Negative issued to Southampton General Hospital: Jan-Oct 2008



Learning Points

The Hospital Transfusion Team at Southampton General Hospital have shown that high demand from a large single hospital may influence regional figures. The audit has demonstrated that hospital demand for O Rh D Negative red cells can be unpredictable. Higher use of 'Emergency O negative' appears to reflect busier hospital activity and as few as two patients can dramatically increase the demand for a particular blood group. Following the peak periods of September and October 2008 O Rh D Negative issues reverted to a normal pattern.

Southampton General Hospital, Southampton University Hospitals NHS Trust, is one of the largest hospitals in the South Central RTC and it was thought that their O Rh D negative issues could be influencing the regions figures.

An initial investigation by the Hospital Transfusion Team showed an increase in the issues of O Rh D Negative red cells during September and October 2008 (fig 3). This increase in issues could be contributing to the higher regional issues.

Further Investigations

- Comparison of three high and three low months of O Negative red cell use

Table 2. O Rh D Negative issued to Southampton General Hospital over two periods

Red Cells Issued	All groups	O Negative	% O Negative
Jan-March 08	4856	435	9.0%
Aug-Oct 08	5177	596	11.5%

- Establish percentage hospital population of O Rh D Negative

Local population percentage for group O Rh D negative was 7.6%

- Determine number of O Rh D Negative issued as 'Emergency'

Table 3. O Rh D Negative issued as 'Emergency'

Emergency O negative	Patients	No. units
Jan-March 08	19	37
Aug-Oct 08	36	70

Review of case notes indicated that use of O Rh D Negative red cells was appropriate in emergency cases.

- Determine number of O Rh D Negative issued to non O Rh D Negative patients.

108 units of O Rh D Negative were transfused to non-O Rh D Negative patients; 56 of which were transfused to 2 B negative patients who had undergone stem cell transplants.

4. Reducing inappropriate transfusion

Southend University Hospital used their BSMS data to show that red cell usage was 20% above other District General hospitals supplied by NHSBT Brentwood (Fig 4). The Hospital Transfusion Team (HTT) used the information from the BSMS together with audit results, recommendations from SHOT and HSC Better Blood Transfusion to provide evidence of the need to reduce red cell usage at Southend. A strategy was formulated to empower laboratory staff to question requests for transfusion outside of indication guidelines.

The HTT presented the proposed strategy to their Hospital Transfusion Committee (HTC) for approval. The HTC and the Trust Strategy Board fully supported and endorsed the plan. A date was set for implementation and an advertising campaign initiated to avoid possible confrontations between laboratory and medical staff. The Transfusion Practitioner gave presentations to the clinical directorates and the Chair of the HTC advising all consultants that red cell indication guidelines were to be used when requesting blood.

The strategy went well and laboratory staff were able to persuade clinical staff to accept fewer units than originally requested when the request did not meet the guidelines. Laboratory staff refer the requesting doctor to the haematology consultant if the request falls outside of the guidelines and where the doctor cannot not support the request with clinical information. The haematology consultant received very few referrals from the laboratory.

The BSMS data was used on a monthly basis to monitor progress. A 15% reduction in blood usage was achieved over a 12 month period (Fig 5). Red cell usage is now a regular agenda item at both the HTT and HTC meetings. The strategy has been extended to include requests for platelets and fresh frozen plasma.

Fig 4. Total red cell issues for Southend University Hospital January - July 2007

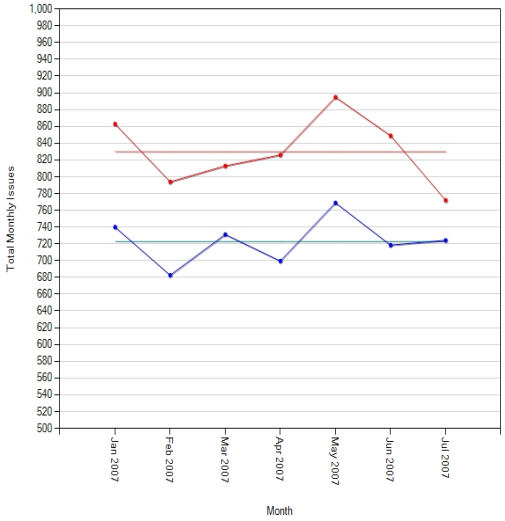
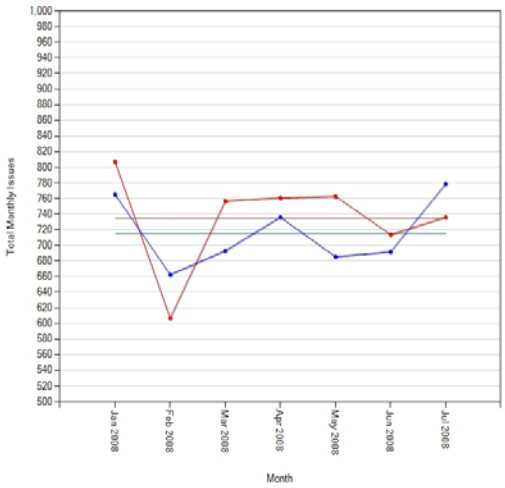


Fig 5. Total red cell issues for Southend University Hospital January - July 2008



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Hospitals and the blood services working together to maximise the use of donated blood by increasing understanding of blood supply management.

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Special thanks to

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